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UNIVERSITY OF TORONTO

President's Report

FOR THE YEAR ENDING
30TH JUNE, 1934

PRESIDENT'S REPORT

1933-1934

To the Governors of the University of Toronto:

GENTLEMEN:

I submit herewith a survey of the academic activities of the University for the year ending the 30th of June, 1934. In this report only certain general aspects of the work are chosen; more detailed and comprehensive statements are found in the special reports from Faculties and Departments. Even the broadest survey of our situation reveals the variety and complexity of our task and withal the underlying unity of aim and spirit. Our organisation into Faculties, Colleges, and Departments makes possible much individuality of educational effort within a common academic family.

The original aims of this University were, among others, to provide higher education for a portion of the community, to give adequate training for those who intended to enter professional life, to inculcate a spirit of loyalty to King and country and of sound morality and religion. These aims have been attained perhaps in ways broader and deeper than the founders could foresee. For many decades the university's work has been carried on to further the idea that in a democratic community it is essential that the citizen body be educated, enlightened, interested and honest. Beyond all other forms of government a democracy demands and must supply wide educational opportunity to its people, young and old. In providing this opportunity our University is seeking to render its measure of national service.

Through our educational effort in this country, we are seeking to do at least two things:—(*a*) to enable the individual student to bring his own special endowment of ability to a high degree of development; and, (*b*) to seek out native capacity and encourage intellectual aptitudes wherever and in whatever degree they may be found. As a result, special ability can become distinguished and highly utilised, and the nation at large will receive an intellectual uplift.

Higher education thus strives (*a*) to train the individual, to produce high intellectual distinction; and (*b*) to raise the general level of intellectual power and appreciation. Increasing attendance at Universities on this Continent ought to imply an enrichment of life for many of ordinary ability, and a better equipment of the body of citizens to deal with the problems of life which confront them. These two functions of the University may be varyingly emphasised, but they are not incompatible. The Chancellor of the University of the City of New York has recently dealt with this educational problem in these words: "The history of State Universities seems to indicate that there is no fundamental contradiction between the large-scale accomplishment in popular education, and the assiduous training of outstanding individuals on a higher qualitative level; no inconsistency, but plenty of difficulty". Our own University, following the well-tried precedents of Universities in the Motherland, has sought, by the establishment of its Honour, and General, and Pass courses, to provide both for specialised work of high distinction and for a broader and less specialised training. How to keep the happy mean between excessive specialisation and shallow extension is a constant educational problem. Many believe that in the undergraduate stage of higher education we shall do well to call for greater synthesis and more unifying principles.

ATTENDANCE

The total number of students in attendance was 7809, of whom 5019 were men and 2790 women; 7509 being registered in the colleges and faculties, and 300 in the departments. The number of students proceeding to degrees was 6374, and to diplomas 677.

Last year the attendance reached the figure of 8274—the highest in our history. This year there has been a drop in registration of 465. I anticipate a further, though smaller, drop next year. I believe that in all universities a similar halt has been called to the rapid growth of numbers. This is due partly to the fact that parents have been less able to help, and that students themselves have not been able to find employment during the summer months, and so the financial resources of some have been exhausted. It is probably also due in part to the fact that more graduates have found positions and have not returned to take further courses at the University.

Many of our students are fighting a gallant battle against adverse financial conditions. The stories of individual sacrifices made to complete a course reveal heroes and heroines in the realm of education. Such discipline and conquest make men and women strong for the later struggle of life. Once more the Alumni Federation Loan Fund, the Students' Administrative Loan Fund, and the Wallberg Memorial Loan Fund for the Faculty of Engineering, have been of the greatest help to students in need. From the Bursary Fund established by the Governors for University College, bursaries were awarded to 80 students, to a total value of $6056. In making these awards special consideration was given to undergraduates, who resided outside Toronto, so that in some degree the educational opportunities of the city and the country might be equalised. Not a few students have been helped in their emergencies from the slender purses of members of the staff.

Will attendance once more increase? I am inclined to think so. Every precaution should be taken to select for the University only those students who have the willingness and the ability to make a worthy use of its opportunities. All are not "called" to be graduates. But it seems likely that in the future there will be a sense of heightened competition for work and that the opportunity to work will be increasingly the prerogative of the trained intelligence. Education, training, knowledge, skill, will more and more be the normal avenues to success. If this be so, the universities and the professional schools will become the chief agencies by which talent and training find their opportunity. Able and ambitious youth will not be satisfied with a static society in which every one remains in the station into which he was born; it will surge upward; it will keep society flexible; it will probably come to the universities in numbers limited only by ability to pay the costs.

THE STAFF

The total staff of the University and University College numbered 864, of whom 114 were professors, 74 associate professors, 61 assistant professors, 214 lecturers, associates (in medicine and dentistry) and instructors in the College of Education, 1 director, 3 assistant directors, 397 demonstrators, fellows and instructors with sessional appointments.

It is with regret that I record the death of several members of the staff: B. A. Bensley, B.A., Ph.D. (Col.), F.R.S.C., professor of zoology; T. R. Robinson, B.A., Ph.D., associate professor of philosophy; H. S. Hutchison, M.B., F.R.C.P. (Can.), assistant professor of medicine; W. H. Dickson, M.D., C.M., F.R.C.P. (Can.), associate in radiology; F. A. Cleland, B.A., M.B., assistant professor of gynaecology and obstetrics; V. J. Harding, D.Sc. (Man.), F.R.S.C., professor of pathological chemistry.

Dr. Benjamin Arthur Bensley, professor of zoology and head of the department of biology, passed away suddenly on the 20th January. He graduated from this University in 1896, and to this University he gave practically his life-work. His postgraduate studies in Columbia University under the famous Henry Fairfield Osborn and in London, gave him adequate preparation for the lectureship in zoology at this University under Professor Ramsay Wright, to which he was appointed in 1902. In due course he became associate professor in 1906, and full professor in 1914, succeeding Dr. Ramsay Wright as head of the important department of biology. He was also appointed director of the Royal Ontario Museum of Zoology. To the discharge of his various duties he brought fine scholarship, good judgment and sympathetic understanding of colleagues. While developing the various branches of the wide department of biology, his own special field of research was the comparative anatomy of vertebrates; in this he made important contributions on the evolution of marsupialia and in vertebrate palaeontology. His "Anatomy of the Rabbit" has been a standard text-book. At the time of his death he was at work on "Comparative Dental Anatomy". He also organised the Ontario Fisheries Branch Laboratory, which has furthered the scientific investigation of the fresh-water fisheries of Ontario. His brother, Dr. R. R. Bensley, an earlier graduate of this University, is head of the department of biology in the University of Chicago. Professor B. A. Bensley worthily maintained the traditions of a famous chair, and wisely administered an ever-growing scientific department.

Dr. Thomas Rutherford Robinson of the department of philosophy succumbed to a sudden heart attack. For thirty years he was a member of the university staff. For many years he divided with Professor Tracy the work in ethics and in that field he remained to the end of his life. His interest in social welfare led him into outside activities, and his work there won him the presidency of the Community Welfare Council of Ontario. He was a conscientious and painstaking teacher, and a colleague who could always be relied upon to accept his responsibilities and discharge them faithfully.

Another sudden death was that of Dr. H. S. Hutchison of the department of medicine. One of our own graduates, he had been long an efficient teacher, whose qualities of head and heart endeared him to his students and his patients.

Dr. W. H. Dickson was one of the pioneers in the Province in the use of X-rays for both diagnostic and therapeutic purposes.

Dr. Cleland passed suddenly on Nov. 26, 1933. He was one of a brilliant group of gynaecologists who, trained in this University, took graduate work abroad and returned to our teaching staff. He was in charge successively of services in St. Michael's, Grace, and Toronto General Hospitals. During the Great War he served as senior surgeon with the C.E.F. in Russia. From 1922 to 1928 he held the assistant-professorship of obstetrics and gynaecology in this University.

At the very close of our academic year we lost Professor V. J. Harding, head of the department of pathological chemistry—another victim of heart disease. A well-trained chemist, he co-operated helpfully with the various departments in the Faculty of Medicine, and was devoted to the stimulation of research.

The ranks of our Professors *Emeriti* have also been depleted by death: R. Ramsay Wright, M.A., B.Sc., LL.D., professor *emeritus* of biology; Irving Heward Cameron, M.B., LL.D. (Edin.), F.R.C.S., professor *emeritus* of surgery; F. N. G. Starr, C.B.E., M.B., M.D.C.M., F.R.C.S. (C.), professor *emeritus* of surgery; T. M. Porter, LL.D., instructor, University Schools.

There was no more brilliant teacher of science on this continent than Professor Robert Ramsay Wright, for many years the head of the department of biology in this University. He came as a youthful Scot, and during his long tenure of office he left an indelible mark for good on this institution. He was an inspiring teacher. He trained in new methods and ideals of scientific teaching many students who now in universities and in the medical profession are themselves leaders and inspirers of others. His gifts of speech, his personal charm, his powers of organisation, his broad culture made him a force for progress in this community. Amid universal regret he retired in 1914 and was succeeded by his pupil, Dr. Bensley. Both teacher and pupil have this year passed into the unseen. Professor Ramsay Wright lived at Oxford during the last years of his life. He frequently represented this University at academic functions in Great Britain, and never lost his interest in her welfare. That interest has been shown by substantial bequests in his will.

Irving Heward Cameron, who in fullness of years passed away on the 15th of December, 1933, was for thirty years professor of surgery at this University and chief surgeon at the Toronto General Hospital. The son of Sir Matthew Crooks Cameron, Chief Justice of the Court of Common Pleas of this Province, he began his career as a student of law, but presently transferred his interest to medicine. In 1887 he was appointed professor of the principles of surgery and surgical pathology, and in 1892 professor of clinical surgery in the University of Toronto. On the death of Dr. Aikins he succeeded him in the chair of surgery and clinical surgery. All the while he aided in the development of hospital services and of adequate facilities for medical teaching. He retired in 1920 with the rank of professor *emeritus* of surgery. During his whole career he took the deepest interest in university affairs. He was one of the founders of the medical faculty of this University and of the Alumni Association. During the Great War he helped to organise the Ontario Hospital at Orpington, Kent, and was the head surgeon both at that hospital and at the Canadian Hospital at Tatlow. He regularly visited the Motherland and so kept in touch with all that was latest and best in the surgery of Britain and the Continent. He followed the finest traditions of the medical profession. His continued interest in classical learning, his wide reading and his fastidious correctness of expression made him a cultivated man of letters and a fascinating lecturer. With this love of the humanities he combined the applied knowledge of the skilful surgeon. When shall we see his like again?

Dr. F. N. G. Starr retired only last year from his professorship of surgery and had been appointed a member of the Board of Governors of the University. A brilliant surgeon himself, he taught by example and precept successive generations of his students enthusiasm for their calling and sound methods of operating.

Dr. Thomas Marshall Porter had a year ago laid down the burden of teaching and carried with him into retirement the affection and reverence of thousands of youths. For twenty-two years in the Model School and for twenty-three in the University Schools he had guided the steps of boys through their adolescent years. His strict discipline was matched by his efficient teaching, his absolute justice, and his personal interest in his boys. No wonder they loved and respected him. In 1926 this University conferred upon him the honorary degree of LL.D. and thus publicly recognised the life work of one of the most remarkable teachers of our generation. Under the terms of his will generous provision is made for the perpetuation of his practical interest in the education of boys at the University Schools. Numerous scholarships will bear his name.

Three members of our staff retired under the age limit after long years of service: A. T. DeLury, M.A., LL.D. (West. and Tor.), F.R.S.C., Dean of the Faculty of Arts and professor of mathematics; C. H. C. Wright, B.A.Sc., professor of architecture; G. R. Anderson, M.A., A.M. (Harv.), professor of engineering physics and photography.

Dean DeLury has given his life's energy to this University. For over forty years he has served in the department of mathematics and passed through all academic grades from lecturer to full professor and head of his department. For over ten years he has held the important administrative post of Dean of the Faculty of Arts. His interests in literature, history and art have enriched his own personality, and in consequence the personalities of his pupils. He has been wise and conciliatory in academic councils and has always kept in sympathetic touch with both graduates and undergraduates. I hope that in this period of technical retirement he will find occasion to visit gatherings of our alumni throughout the Province, and still be an active apostle of university progress. On his retirement a complimentary dinner was tendered to him, and his portrait was presented to him, and by him in turn was given to the University.

Professor C. H. C. Wright has been head of our School of Architecture for a generation. Though trained primarily as an engineer, he gathered about him a teaching staff which covered the whole range of architectural requirement. Many of the leading architects of the Province have been his pupils. He carries with him the good wishes of his colleagues and old time students.

Professor G. R. Anderson of the department of engineering physics is also widely known for his really remarkable work in photography. For all departments of the University he has made illustrative slides for teaching purposes. This method of teaching has made great strides in recent years. Professor Anderson, still vigorous, is a great authority on the practical lighting and acoustics of buildings. He hopes in his leisure time to classify our vast library of slides.

The following resigned their positions: W. Pakenham, B.A., LL.D., Dean, Ontario College of Education and professor of school administration; R. D. Rudolf, C.B.E., M.D. (Edin.), F.R.C.P. (London and C.), professor of therapeutics; G. Royce, B.A., M.B., F.R.C.S. (C.), associate professor of oto-laryngology; H. E. Clutterbuck, M.D., C.M., F.R.C.S. (Edin.), assistant professor of surgery; H. M. Cassidy, B.A. (B.C.), Ph.D. (Brookings), assistant professor of social science; Miss E. N. Nagle, B.Sc., M.A. (Col.), assistant director of the School of Nursing.

Dean Pakenham has been a teacher, an official in the Department of Education, and a trainer of teachers. With the deepest regret, on account of his health, we have been obliged to let him retire. He has been a sympathetic and wise director of the Ontario College of Education, and has taken no small part in the general life of the University. As a member of the Caput, his kindliness, moderation, and good sense were of marked value in maintaining the discipline of the University.

After many years of faithful and efficient teaching Dr. Rudolf resigned the chair of therapeutics. His writing and his instruction have made a deep impression on thousands of medical students. He firmly believed in the value of a separate chair of therapeutics. In the Great War he had a fine record of overseas service in the Medical Corps.

Dr. Royce and Dr. Clutterbuck, the one at the Toronto General Hospital and the other at the Western, have left records of efficient work and excellent teaching.

Dr. Cassidy has been appointed director of public welfare in his native Province of British Columbia. In this Province he had made himself an authority on the subject of wages and unemployment and gave evidence on these conditions on several occasions before Parliamentary and public bodies. He admirably combined knowledge of both the theory and the practice of social science. A successor has not yet been appointed. A well-equipped successor is hard to find.

Of those members of the staff who have retired, we may truly say that their lives have been merged in the institution they have so faithfully served. For what they have accomplished for the University, for the cause of sound learning, and for the deepening of the lives of their students, we give them due honour. We wish them comfort and joy in whatever pursuits and indulgences may be theirs in years to come.

Leave of absence was granted to the following:

For the whole year: J. Chapelon, D. es Sc. (Paris), professor of mathematics; A. E. Grauer, B.A. (B.C. and Oxon), Ph.D. (Cal.), lecturer in political economy. For the Easter Term: E. C. Beck, B.S.A., M.A., lecturer in botany; Miss M. B. Fergusson, M.A. (St. And.), B.A. (Camb.), lecturer in Latin.

The following new appointments and promotions were made during the year:

In the Faculty of Arts:—Appointments: C. A. Chant, M.A., Ph.D. (Harv.), F.R.S.C., director of the David Dunlap Observatory; Homer A. Thompson, M.A. (B.C.), Ph.D. (Mich.), assistant professor of classical archaeology; J. K. L. MacDonald, M.Sc. (McG.), Ph.D. (Camb.), lecturer in physics; A. Pitt, B.A. (Houghton), lecturer in physics; Miss F. M. Quinlan, M.A., Ph.D., lecturer in physics; J. O. Wilhelm, B.Sc. (Sask.), M.A., lecturer in physics; F. P. Ide, M.A., lecturer in botany.

Promotions:—R. K. Young, B.A., Ph.D. (Cal.), F.R.S.C., from an associate-professorship to a professorship in astronomy; J. E. Thomson, B.A.Sc., Ph.D. (Harv.), F.R.S.C., from an associate-professorship to a professorship in mineralogy; N. A. M. MacKenzie, B.A., LL.B. (Dal.), LL.M. (Harv.), from an associate-professorship to a professorship in public and private international law in the department of political science; A. F. C. Stevenson, M.A., Ph.D. (Camb.), from an assistant-professorship to an associate-professorship in applied mathematics; E. H. Craigie, B.A., Ph.D., from an assistant-professorship to an associate-professorship in comparative anatomy and neurology in the department of botany.

In the Faculty of Medicine:—Appointments:—G. F. Marrian, D.Sc. (Lond.), associate professor of biochemistry; T. A. J. Duff, M.B., F.R.C.S. (Edin.), associate in surgery; K. G. McKenzie, M.B., F.R.C.S. (C.), associate in surgery; F. A. Aylesworth, M.D., C.M. (Qu.), associate in ophthalmology; C. E. Hill, M.D., F.R.C.S. (C.), associate in ophthalmology; M. Lyon, M.D., C.M., associate in ophthalmology; W. W. Wright, M.B., associate in ophthalmology; W. H. Dickson, M.D., C.M. (McG.), F.R.C.P. (C.), associate in radiology; A. E. MacDonald, M.D., F.R.C.S. (C.), associate in ophthalmology.

Promotions:—G. E. Richards, M.B., F.R.C.P. (C.) from an associateship to an associate-professorship in radiology; H. E. Clutterbuck, M.D., C.M., F.R.C.S. (Edin.) from an associateship to an assistant-professorship in surgery; R. Pearse, F.R.C.S. (Eng.) (C.) from an associateship to an assistant-professorship in surgery.

In the Faculty of Applied Science: Appointments:—R. J. Brown, B.A.Sc., lecturer in electrical engineering; G. R. Lord, B.A.Sc., S.M. (Mass. Inst. Tech.), lecturer in mechanical engineering.

In the Faculty of Dentistry: Appointments:—R. G. McLean, D.D.S., professor of dental praxis.

In the Faculty of Music: Appointments:—H. Willan, Mus. Doc., lecturer.

In the School of Nursing: Appointments:—Miss E. N. Nagle, B.Sc., M.A. (Col.), assistant director; Miss W. L. Chute, B.A. (Ac.), lecturer.

In the Ontario College of Education: Appointments:—M. P. West, M.A., D.Ph. (Ox.), research professor in language study; N. McLeod, M.A. (Qu.), instructor in English and history; W. R. Stewart, B.A., instructor.

In the Department of Medical Research, Banting: Appointments:—W. R. Franks, M.A., M.B., assistant professor.

During the past year several of our teachers have rendered marked public service: Mr. A. F. W. Plumptre was assistant secretary to the Banking Commission of which Lord Macmillan was the Chairman; Professor Kemp has given expert advice to the Tariff Board at Ottawa; Professor Innis has been a commissioner for Nova Scotia; Professor Cassidy has given evidence on unemployment and wages; Professors Urwick and Wasteneys have been members of the Lieutenant-Governor's Committee on Slums; Professor Gilchrist has done valuable work for the Minister of Mines in the field of geophysics. These are but examples of what many have done outside their immediate academic tasks. I believe that this kind of service is of peculiar value to the State, and is a service which the State may properly ask the Universities to render. The University should put at the disposal of the State whatever information science can provide and whatever knowledge of economic experiment can be gained from all parts of the world. From the trained staff of university teachers and investigators should come those whose extent of knowledge and mastery of method in scientific, economic or historical fields will make them helpful colleagues of practical men charged officially with the duty of inquiry and legislative action.

Honours were conferred upon members of the staff:

A knighthood upon Dr. F. G. Banting: Professor V. W. Bladen was elected secretary-treasurer of the Canadian Political Science Association; Dean N. W. DeWitt of Victoria College was elected to the executive council of the American Philological Association; Dr. J. G. FitzGerald, dean of the faculty of medicine, was selected by the Rockefeller Foundation as one of a committee to conduct a health survey in India, and was elected second vice-president of the American Public Health Association; Professor Duncan Graham was elected a fellow of the Royal College of Physicians of London, England; Professor Perry Goldsmith was elected president of the American Oto-Laryngological Society; Professor H. S. Jackson was elected president of the Mycological Society of America; Professor G. H. Needler was awarded the silver medal of the German Academy "For Merit", and also made a corresponding member of the Schiller Academy of Munich; Professor Chester Martin was invited by the associated alumni of the University of New Brunswick to deliver the annual alumni oration; Professor T. J. Meek was Haskell Lecturer at Oberlin College, and was elected Chairman of the Committee on the standardisation of the Transliteration of cuneiform and on the Executive Committee of the American Schools of Oriental Research; Professor Lash Miller was elected President of the Royal Society of Canada; Professor W. A. Parks was elected a Fellow of the Royal Society of London, England; Professor W. R. Taylor had the honorary degree of Doctor of Divinity conferred upon him by Queen's University; Professor T. L. Walker was elected Vice President of the Royal Society of Canada; on the President the University of Glasgow conferred the degree of LL.D. *honoris causa.*

When the staff is numerically large, as is the case in our University, it is difficult for the members to know one another, and possibly to realise that they are integral parts of one great organism. In order to bring all the members of our teaching body together I gave a reception to them and their wives in the Royal Ontario Museum—a superb background for a social gathering. Over a thousand were present and had an opportunity of realising how many and how varied we were, and yet how real was the loyalty which bound us in a unity of common devotion. Later in the year the staff in turn tendered a reception to my wife and myself, which we deeply appreciated, both as an evidence of goodwill and as a further opportunity of social reunion.

I wish again this year to express my gratitude to the whole academic and administrative staff for their unfailing co-operation. It is the teaching staff which really makes the University. On its power of inspiring interest in study and research depends the academic health and growth of the institution. Of our staff we may well be proud. Many of the great Universities of the world are represented in our ranks by their graduates—and in their ranks by our graduates. We seek to avoid the danger of in-breeding, and at the same time to open an academic career to our own Canadian scholars.

FACULTY OF ARTS

In University College the Library, installed in the East Hall—the old home of the Library in the days before the fire—has again received $5000 from the Carnegie Corporation. This college library is being increasingly used and to some extent relieves the pressure on the reading-room space of the central library.

There is a marked development of *esprit de corps* in University College among both the men and the women students. In the Men's Residence, Mr. A. F. W. Plumptre has succeeded Mr. George McGillivray as tutor in residence. The beautiful Women's Residence, Whitney Hall, is filled to capacity. The room rates in all these residences, as in the University Residences on Hoskin Avenue, have been reduced to meet outside competition.

The requirement of honour matriculation for entrance to the Faculty of Arts has undoubtedly raised the standard of scholarship for undergraduates. When pass matriculation was the qualification required for admission the failures at the end of the first year in the pass course were from 30 to 35 per cent. of those who wrote. Ever since the higher requirements have been in force, the failures at the end of the first year in residence have been reduced to 20 per cent. This first year actually spent under university conditions always requires much re-adjustment of viewpoint and character of work, as compared with the supervised work in the secondary school. More responsibility is thrown upon the student himself. There will always be failures among those who are slow in thus adjusting themselves, but the higher standard of entrance is lessening the number of such failures. In the main those who come to the University have seriousness of purpose and the necessary ability to make full use of the opportunities which the University offers.

A course in Meteorology has been provided, without extra cost to the University, by instructors from the department of physics and from the Meteorological Observatory. All who took the course have obtained suitable positions.

For many years Professor Gilbert Jackson has been supervisor of the students in Commerce and Finance, and has himself taken charge of the Employment Bureau, through which these students have obtained positions. Pressure of work now compels him to turn over this part of his duties to Professor Ashley. For his signal services in keeping the department in touch with business and business men, we owe him a debt of gratitude. He still, of course, continues his lectures.

FACULTY OF MEDICINE

The chair of therapeutics has been filled by the appointment of Professor Ray Farquharson. While this remains a separate chair, the holder of it will work in close co-operation with the departments of medicine and pharmacology. Only so can the best instruction be given.

Anaesthesia is recognised as a special sub-department of therapeutics; and another sub-department of physical therapy is added. This last marks a real step in advance. Under the guidance of scientifically trained persons massage and physical manipulation can be taught and practised in closest alliance with the regular medical profession.

Biology is being more closely linked with medicine by the transference of Professor Irving from the department of physiology to be professor of experimental biology. Professor Irving will help to foster close co-operation between his old and his new department.

The limitation of the number of students entering medicine is a subject still engaging the attention of the Faculty Council. Most medical colleges are to-day imposing some limit; how to do this fairly and wisely is no easy problem.

Money for research in this faculty is a constant need. The bibliography attached to this report gives some indication of the amount of excellent research work now being done by our staff. I venture to draw attention to Dr. Dolman's anti-toxin against staphylococcus infection.

The fellow-students and friends of the late John Copp, so foully murdered last year, have raised a sum of $4300 to found a scholarship in his memory in the faculty of medicine.

APPLIED SCIENCE AND ENGINEERING

Several changes are in prospect in this faculty by reason of retirements from the staff. The School of Architecture is now headed by Professor Madill, who succeeds Professor Wright. Mr. H. E. Burden, who has had a wide and varied training in Schools of Architecture on this Continent and in Europe, becomes a full-time assistant professor; and Mr. Mathers, of the well-known architectural firm of Mathers and Haldenby, becomes a special lecturer. In this way, as in other ways, the School is being kept in close contact with the practising architects and the present realities of the profession. Professor Madill is visiting various Schools of Architecture in the United States, Great Britain and Europe, to observe the latest developments in design and construction. Professor Arthur continues his work of surveying and describing fine specimens of early architecture in this Province.

A new graduating department—that of engineering physics—has been established in this faculty, in co-operation with the departments of mathematics and physics in the Faculty of Arts. The conditions of admission are exacting, but the probabilities are that this will be a course taken by many of the best students. Such developments as radio, telephony, television, call for a thorough grounding in physics. The engineer of the future will likely be both physicist, mathematician and engineer. I am specially glad that by the institution of this course there is secured close co-operation between the Faculty of Applied Science and the department of physics. There should be no insurmountable wall between faculties. Our resources are too limited to permit of any avoidable duplication of work. In applied physics Mr. K. Jackson succeeds Professor Anderson.

There has been a steady growth in the number of students in chemical engineering. Of this year's freshmen class of 226, no fewer than 81 registered in this department. The probabilities are that this proportion of students in chemistry will be maintained. A similar growth is found in the chemical department of the Faculty of Arts. Here it will be necessary either to limit the number of students to be admitted, or to provide additional accommodation, or to provide some joint accommodation for chemistry in Arts and in Engineering. Unnecessary duplication we must avoid, and all possible co-operation between allied departments and between faculties we must secure. This is a problem that immediately confronts us. I believe that the number of students in chemistry will be maintained. No Canadian industry has made such strides or has weathered the depression so well as has the chemical industry. The value of its products averages more than one hundred million dollars a year. In many countries, including our own, the period since the war has been peculiarly notable because of the tremendous advances in industrial chemistry. Research has revealed and created a number of new materials, and the indirect outcome has been a series of rapid changes in almost all industries as new chemical products which competed with old-established products were put on the market, or as the new materials were substituted in the manufacture of established products. In the steel, aluminum, and paper industries, the chemical expert is essential. Competent chemical engineers must be added to the staff of most progressive industries to-day. There will be in the judgment of those most competent to express an opinion continued openings for the scientifically trained chemist and chemical engineer. For this reason I am convinced that additional accommodation will be required for our chemical students.

Indeed the outlook for engineers in Canada seems favourable. There is a mounting accumulation of deferred private developments, which will be taken in hand as times improve, and mining in our Northland is still in its infancy.

Wise teachers in this Faculty do not fail to lay stress on the cultural and non-technical training for their students as well as on their strictly professional instruction, so that our young engineers may be both well-trained and well-educated men.

ONTARIO COLLEGE OF EDUCATION

The fine traditions of this faculty, created under the long headship of Dr. William Pakenham, will be maintained and enriched by his successor, Dr. Althouse, the former headmaster of the University Schools. Happily the number of students registered is less than last year.

A significant and satisfactory development in the work here is the large number of teachers who are pursuing graduate courses in education for the degrees of Bachelor and Doctor of Paedagogy. In the department of educational research, Professor Sandiford is dealing with the value of intelligence tests, and Professor Michael West with methods of learning foreign languages.

SCHOOL OF GRADUATE STUDIES

The Dean's report shows the wide field from which our graduate students are drawn, and the astonishing growth of the School. To strengthen this important side of our academic work, there is need, as I say elsewhere, of further equipment of books. But the chief need is the establishment of fellowships of an annual value of about $500, by means of which students from other Universities in Canada may be able to come to Toronto. Our sister Universities in the United States have in the past had large resources at their disposal for this purpose, and innumerable Canadian students have benefitted by their generosity. We would like to have in our own University some analogous method of attracting and aiding suitable students. Such an investment would be of great ultimate value to Canada. There would be more intellectual commerce between East and West, and more young Canadians of advanced training would probably remain to find their life-work in the land of their birth.

The most distinctive line upon which this University can develop is the line of graduate studies and research. Our University, because of its resources, equipment and staff, is under moral obligation to the whole Dominion to provide postgraduate opportunities for Canadian students. The Connaught Laboratories feel and are discharging a somewhat similar obligation to all the Provinces of Canada. We are a Provincial institution, but our true field is more than Provincial.

UNIVERSITY EXTENSION

Under Mr. Dunlop's wise and energetic direction Extension Classes for various groups in the community, such as workmen, farmers, bankers, secretaries and adults generally, are growing apace. The teachers' courses also fall under this department and really make provision for what is almost a small college or faculty. No group of students takes its work more seriously, or brings to it a greater maturity of appreciation. Mr. Dunlop estimates that about 6000 in the University and 30,000 outside in the Province are being reached by the efforts of this organisation for the extension of the University's spirit and influence. One interesting feature of the evening classes is that their trend is not towards more practical instruction, but towards economics and other "cultural subjects".

The field of adult education through the University is exceedingly wide. We must in the instruction given maintain the university standard and character of work, and avoid covering ground that may be covered in the evening classes of the secondary schools. Last May a very successful conference on Adult Education was held in this University, to which came delegates from the various Departments of Education and Universities of Canada. A permanent conference committee was formed to gather information and secure co-operation among the various organisations engaged in this task. It was felt that the Universities and the Departments of Education were the bodies best able to carry on and supervise this widespread undertaking. The visit of Dr. Albert Mansbridge, the founder of the Workers Educational Association in England, was an event of interest to all who are engaged in this branch of university extension.

SCHOOL OF NURSING

This School under Miss Russell's direction now numbers 250 students. It is housed in No. 7 Queen's Park, by kindness of the Provincial Government, and it receives from the Rockefeller Foundation $17,500 a year for a period of years. It has had a satisfactory term. Some interesting experiments in the training of public health nurses are being made. The Toronto General Hospital has kindly co-operated in furnishing facilities, and various members of the university staff have given their services to supplement the work done by the permanent members of the School staff.

THE LIBRARY

The college and the departmental libraries give some relief to the overcrowding in the Central Library. The situation in regard to it is such that it is necessary to withdraw from circulation certain books and sets of periodicals and to place them in storage in other buildings. More space and more books are still our need. This need of books is most urgent to meet the requirements of the School of Graduate Studies. If we are to maintain our efficiency in research and in graduate work we must adequately equip the Library, which has aptly been called "the laboratory of the humane letters".

Special accommodation in the basement of the Central Library is being fitted up for law books and as a reading-room for the students in law.

The various Public Libraries in the city have co-operated in producing a catalogue in which all periodicals taken are duly recorded. This enables libraries to avoid duplication and virtually to pool their "periodical" resources.

I am glad to record that Victoria College has purchased the library of the late Professor A. J. Bell. In it is an excellent collection of Erasmiana, which will be available by the courtesy of the college to all students in this field of Church history.

HEALTH SERVICE

One of the most satisfactory features of the annual health examination of students is that only a negligible proportion are found to be unfit for physical exercise. This year among the 2000 men examined only 22 were exempted, by reason of heart conditions or as a result of infantile paralysis. Of venereal disease there was no trace. An interesting comment on our medical examination is made by Sir Arbuthnot Lane, Bt. in his recent work, "Blazing the Health Trail". He writes:

"In the University of Toronto the boys are collected in large buildings, where they have the advantage of a magnificent gymnasium, bathing pools, etc. They are carefully examined by medical men who are specially trained for this purpose, and they are graded as to their capacity to perform physical work. Some form of exercise is insisted on for two or three years, but it bears a definite relationship to the physique of the individual.

"I would suggest that a highly competent man be sent to such a University as that of Toronto, where he can have an opportunity of studying the very thorough supervision of the physique and exercises of the youth, and on his return to England he can stimulate the authorities of our public schools and the Government to take the matter in hand, and to deal with it thoroughly".

STUDENT ACTIVITIES

The circulation of books from the Central Library is about seven per cent. greater than it was the previous year, and that circulation had in its year marked an increase of twenty-five per cent. The evening readers are more numerous than ever, in spite of the relief afforded by the college and departmental libraries. This all indicates a spirit of hard work and determination to make the most of the opportunities which the University offers.

The athletic activities of the students are under the direction of Mr. Warren Stevens, whose personal influence is helpful, and whose athletic experience makes him an efficient coach. Our senior football team had a fine season of play, even though they just failed to win the championship. Many hold the view that the Senior Rugby Team should not play after the Intercollegiate games are over. With this view I am in accord. It is not fair to the members of the team that their college studies be unduly interfered with by a prolonged season. The amateur character of university athletics must be scrupulously preserved, and there must be a constant remembrance that athletics in college is a means to an end—the end of all round personal development, and not an end in itself.

To the Students' Administrative Council we are deeply indebted for their wise supervision of general student undertakings, for their constant co-operation with the university authorities, and for the help they have given the Board of Governors in a time of financial difficulty by becoming responsible for the publication of the Directory and for the holding of the annual Convocation Garden Party.

HART HOUSE

This centre of student life is a unifying factor in the University. From the Warden's report it will be noted how many and varied are the activities which are here carried on—social, artistic, religious, intellectual and athletic.

The competition of restaurants in the neighbourhood still makes the financial condition of the Dining Hall somewhat difficult.

Visitors from the ends of the earth come to see the House, as an institution virtually unique among universities.

ALUMNI FEDERATION

This comprehensive organisation of the Alumni of the University in all its faculties and colleges has suffered considerably in its revenues during these years of depression, but it is still carrying on. There is a great and open door before it. To strengthen the bonds of mutual interest and assistance between the University and its graduates is a policy as wise as it is necessary. There is here a wealth of support and enthusiasm for the University waiting only to be organised and rightly directed. Local associations could, for example, establish by yearly payments scholarships to be awarded to suitable students in their own district, and could thereby make a helpful contribution to the equalising of educational opportunity for those who do not reside in the university city. This University largely depends for its support upon the goodwill of the people of the Province. To create and foster intelligent goodwill is largely within the power of the graduates.

VISITING LECTURERS

During the year the following special lectures were delivered:

On the Alexander Foundation a course of four lectures by Professor G. G. Sedgewick, of the department of English, University of British Columbia, on "Irony"; a lecture by Mr. Albert J. Adams, verger of Winchester Cathedral, on "English Cathedrals and English Countryside"; a lecture by President H. R. MacCracken of Vassar College, on "Education for Women"; a lecture by Mr. Philp J. Noel Baker, secretary to the President of the Disarmament Conference 1932-33, on "The Next War"; a lecture by Dr. J. A. Todd, Trinity College, Cambridge, and University of Manchester, on "Applications of Algebraic Functions to the Theory of Correspondence"; four lectures in Portuguese by Dr. de Magellanes Wilf of Porto, Portugal, on "Camoens' *Os Lusiadas*"; a lecture by Professor Manley Hudson, Bemis professor of International Law, Harvard Law School, on "The Contributions of the United States to International law since 1919"; a lecture by Sir Raymond Unwin, Kt., immediate past president of the Royal Institute of British Architects, on "Townplanning and Housing"; The Donald C. Balfour Lecture by Dr. William D. Haggard, professor of clinical surgery, Vanderbilt University, on "The Seeds of Time"; a lecture by Dr. Albert Mansbridge on "The Education of the Workers"; a lecture by Dr. Stanley Jones of India on "India".

The following lectures were delivered in the University under the auspices of the National Council of Education: "The great illusion of war" by Sir Norman

Angell; "The League of Nations and International Politics" by Dr. Alfred Zimmern, professor of international relations of Oxford University; "The Interior of Arabia" by Mr. Bertram Thomas; "National Recovery in England" by the Rt. Hon. Sir Arthur Steel-Maitland, formerly Minister of Labour in the Imperial Government; "An Italian looks at England" by Signor Luigi Villari; "Social Reconstruction in Italy" by Signorina Amy Bernardy; "The Corporate State" by Don Mario Colonna (Duc di Rignano); "The Arts of Italy" by Signor Eugenio Croizat.

The following lectures were given in Convocation Hall under the auspices of the Royal Canadian Institute:

Sir Robert A. Falconer, K.C.M.G. on "The Disquieting Area of the Pacific"; Dr. L. Dudley Stamp on "Some Problems in Land Utilisation in Great Britain"; Dr. Ellsworth Huntington on "A Geographer's Comparison between Russia and Canada"; Professor A. F. Coventry on "Animal Life in Timagami"; C. Marius Barbeau, Esq., on "How Canada was first peopled"; Dr. E. S. Riggs on "Travels and Researches in Argentina"; Dr. Harold Hibbert on "Cellulose—Its Scientific and Industrial Significance"; Principal Hamilton Fyfe on "Natural Science and Liberal Education"; Dr. F. E. Lutz on "Testing Insect 'Intelligence'"; Professor D. B. Copland on "Australia in the Crisis"; Dr. George B. Barbour on "Flood Control in China and Elsewhere"; F. T. Davies, Esq., on "Life in The Arctic and Antarctic"; Professor D. L. Thomson on "The Unity of the Body"; Professor John Satterly on "Liquid Air"; Dr. A. H. Compton on "The Quest of the Cosmic Ray"; Dr. J. H. Elliott on "The Surgeons of York and the Part they played"; W. S. Wallace, Esq., on "Life in Toronto in 1834"; Dr. Albert Mansbridge on "The Nature and Place of Adult Education in the Community"; J. H. Parkin, Esq., on "Aircraft in Canada"; Sir Arthur Eddington on "The Expanding Universe".

VISITORS

From the visits of distinguished publicists, statesmen and scholars, who in the course of the year give lectures to the University, much stimulus is received by staff and students alike. We are thus kept in living touch with the currents of thought in other centres of science and literature. Some of these visitors come directly to the University; some come under the auspices of the Royal Canadian Institute, and some under the auspices of the National Council of Education.

Last September the University gave a reception in the Royal Ontario Museum to the delegates who had come from different parts of the Empire to take part in a conference on British Commonwealth Relations, arranged by the Canadian Branch of the Institute of International Affairs, and held in Hart House. Among the delegates were Viscount Cecil of Chelwood, Sir Herbert Samuel and Sir Donald Somervell (the present Solicitor-General for Great Britain).

LEARNED SOCIETIES

The following learned societies met at the University:

The Botanical Society of America held their Eastern Summer meeting in the Botany Building. Many distinguished visitors attended. Two days were spent in the field, visiting the Bruce Peninsula.

The American Association of Pathologists and Bacteriologists and their affiliated societies held their annual meeting at the Banting Institute. The meetings were most successful. The symposium this year, which was on arteriosclerosis, was led by Professor O. Klotz.

SPECIAL CONVOCATIONS

Special Convocations were held: October 12, upon the occasion of the reopening of the Royal Ontario Museum when the honorary degree of Doctor of Laws was conferred upon Charles Greeley Abbott, Esq., Secretary of the Smithsonian Institution, Washington, D.C., James Brock O'Brian, Esq., Chairman, Board of Trustees, Royal Ontario Museum, Mrs. H. D. Warren, Vice Chairman, Board of Trustees, Royal Ontario Museum, and Sigmund Samuel, Esq., member, Board of Trustees, Royal Ontario Museum; November 20, when the honorary degree of Doctor of Architecture was conferred upon Sir Raymond Unwin, Kt., immediate past president of the Royal Institute of British Architects; on June 6th, when the honorary degree of Doctor of Laws was conferred upon His Eminence J. M. Rodrigue Cardinal Villeneuve, O.M.I., Archbishop of Quebec; The Honourable Leonard Percy DeWolfe Tilley, K.C., LL.B., Prime Minister of New Brunswick; The Honourable Charles McCrea, K.C., Minister of Mines of Ontario; Sir Robert Ludwig Mond, Kt., M.A., F.R.S. Ed., Honorary Trustees of the Royal Ontario Museum; Alfred Tennyson DeLury, M.A., Dean of the Faculty of Arts and Professor of Mathematics in the University of Toronto; William Scott Ferguson, A.M., Ph.D., Litt.D., McLean Professor of Ancient and Modern History in Harvard University; Percy James Robinson, M.A., Classical Master in St. Andrew's College, Aurora; and the honorary degree of Doctor of Music upon Edward Johnson distinguished Canadian tenor of the Metropolitan Opera Company, New York.

BENEFACTIONS

During the year the University has received the following benefactions, totalling $1,079,536.13:

From the Wallberg Memorial Fund, $774,575.60; E. C. Whitney Bequest, $159,300.00; Rockefeller Foundation: Child Research and Parent Education, $17,908.08, School of Nursing, $17,288.68, Paediatrics, $8,315.48; Eaton Endowment, $25,000.00; William Erving Fairclough Scholarship Fund, $25,000.00; Carnegie Corporation: University College Library, $5,065.63, Workers' Educational Association, $3,440.94; Estate of the late D. A. Dunlap, towards David Dunlap Observatory Building, $10,000.00; Maurice Cody Memorial Scholarship, Modern History, $3,000.00; Florence Cody Memorial Scholarship in University College, Matriculation $2,500.00; Henry John Cody Scholarship in University College, Matriculation $2,500.00; Maurice Cody Memorial Scholarship, University Schools, $10.00; Reuben Wells Leonard Fellowship and Scholarship, $3,500.00; Canadian National Committee for Mental Hygiene, Psychiatry, $2,767.91; Flavelle-Peacock Lectureship: Sir Joseph Flavelle, $1,250.00, E. R. Peacock, Esq., $1,250.00; Graduate Fellowships: Sir Joseph Flavelle, $1,000, Imperial Oil Limited, $500, Estate of the late Sir Edward Kemp, $500; J. A. Findlay Scholarship, Mechanical Engineering, $1,650.00; University Schools Scholarships: Hon. N.W. Rowell, K.C., for Langford Rowell Scholarship, $1,050.00, Sir John Eaton Memorial Scholarship, $120; D. A. Dunlap Memorial Scholarships, $1,000; Faculty of Dentistry: Ontario Dental Association Fellowship, $250, J. B. Willmott Scholarship, $250; Gertrud Davis Exchange Fellowship, $500; Jenkins Scholarship, Engineering, $500; Sir Edmund Walker Scholarship, $450; Library Psychology Fund, $450; Robert Bruce Scholarship, $445.93; University College Alumni Matriculation Scholarship, $400; Social Science Scholarships: Anonymous $300, St. Margaret's College Alumnae Scholarship, $75; Robert Simpson Company Scholarship, $350; S. R. Parsons Scholarship, Commerce and Finance, $250; Standard Brands Research Fund, Chemistry: $247.50; Boiler Inspection and Insurance Company Scholarship, Mechanical Engineering, $150; George Kennedy Scholarship, $131.45; Sarah Kennedy Scholarship, $100; University College Alumnae Scholarship, $100; Maurice Hutton Matriculation Scholarship, $100; Delta Phi Epsilon Bursary, Zeta Chapter, $100; F. W. Jarvis Bursaries, $100; Darling and Pearson Prize in Architecture, $100; Toronto Brick Prizes, Architecture, $100; Ontario Association of Architects Scholarship, $100; Hon. Charles McCrea for Dent McCrea Scholarship, $50; Dr. R. A. Reeve, Prize, Medicine, $50; Mathematics Scholarship, Professors Beatty and Pounder, $50; Engineering Institute of Canada Prize, $25; Canadian Medical Institute

Prize, $25; Ontario Medical Association Prize, $25; University College French Society Prize, $25; St. Margaret's College Old Girls' Association, Florence M. Needlands Prize, $20; Alumnae Prize in English, $10; Additional items, $116.86.

In addition to the above a copper proof etching of a portrait of Sir Thomas More from an original by Albrect Durer was presented by Mr. J. E. Phillips of Toronto; from the late Professor Ramsay Wright: his hood and gown; a photostat copy of a manuscript in the National Library of Paris; and the first translation from the Persian manuscript made by him with his transcription of the Persian work into Roman lettering.

We are deeply grateful for these numerous benefactions. This University is a public institution, the child of the Province, and has been generously supported by the Legislature in the form of annual grants. But this fact has not restrained, and ought not to restrain, the steady flow of gifts from individual friends and graduates and groups of graduates. Such gifts either lighten the burden of cost to the Province, or provide scholarships or equipment for the provision of which public funds cannot usually be spent. The Wallberg bequest is to be devoted to the furtherance of the work of the Faculty of Applied Science and Engineering, either by the erection of needed buildings, or in any other way that shall be approved by the Governors of the University. So far part of the income from the bequest has been used as a Loan Fund to aid students of the third and fourth years in this faculty. Whatever is done with the bequest must be done as a memorial to the late Emil Wallberg. The Reuben Wells Leonard bequest has become operative for the first time this year.

FINANCES

The University is supported partly by endowment, more largely by student fees, and most largely by Provincial Government grant, both statutory and annual. In recent years the annual legislative grants have of necessity been reduced, and our expenditure has in consequence been correspondingly curtailed. In both expenditures on material things, such as equipment and supplies, and on salaries, drastic reductions have been made in order to balance our budget. I cannot speak too warmly of the co-operation of the administrative and academic staff in making such curtailments. For many of our teachers "sacrificial frugality" became a rule of life. These salary cuts fell most heavily on the junior members of the staff, because at the same time they did not and could not receive their normal automatic salary increases. I am thankful to say that the removal of the second salary cut has meant much to the whole staff. I hope that the day is not far distant when all salaries will be restored to the original scale. In the estimates prepared for this coming year provision is made for salary increases to the junior members of the teaching staff. In spite of the temporary salary reductions I believe that the *morale* of the staff was well maintained and that the efficiency of the university teaching did not suffer.

During my recent visits to Great Britain I learned that the Imperial Government did not reduce the amount of its grants to the various universities, and that, largely in consequence of this, the university salary scale was maintained through these years of financial restriction. The British academic creed is that men are of more value than buildings and that the staff must be worthily maintained even if material requirements come short.

We must try to reward our teachers according to their merits and our financial ability. It is not wise to give advancement on grounds of mere length of service. Excellence of teaching, power of stimulation, productivity in research, are reasons for promotion. A distinguished university teacher has recently said: "One of the persistent fallacies in the academic realm is that the stairs of professorial gradation lead only upward, and will carry to the top even those who most consistently eschew personal exertion." A living and progressive university is not the proper home for instructors who are intellectually "dead though they have a name to live".

This year the fees have been advanced in the School of Graduate Studies. The fees in the various undergraduate departments have been more promptly paid this year than in the past. This has been due to the enforcement of the Board's regulation that at least half the year's fees should be paid by the end of the first term. No real hardship to the student, so experience shows, is involved by this earlier collection of dues.

NEW BUILDINGS

The most notable event of the year was the re-opening of the vastly enlarged building of the Royal Ontario Museum on the 12th October, 1933. This was formally done by the Hon. Dr. Bruce, Lieutenant-Governor of the Province. The Museum and the University are inextricably and intimately connected. The Directors of the various museums are professors in the relevant departments of the University. The Museum serves the University directly in teaching and research. At the same time its treasures are available to the whole Province.

The Museum is now carrying on through its Directors and assistants a campaign of education for the public, young and old, by means of lectures and conducted tours. The time will come when the Museum will have to develop its own work of research on the basis of its marvellous collections of specimens. In the last year the attendance of visitors has passed the 250,000 mark, and is steadily growing.

The American Museum Association met at our Museum last May and the members were sincere and discriminating in their words of enthusiastic comment. The Royal Ontario Museum stands now as one of the great Museums of the world. Its Chinese collection is unique in excellence and in extent. A valuable addition to the Museum has been made by the purchase of an extensive Chinese Library of 50,000 volumes. Bishop White seized the opportunity of purchasing this library in Peking. He and Dr. Ferguson of Peking (a former Canadian, now an adviser to the Chinese Government) contributed half the purchase price; the other half was given by Dr. Sigmund Samuel of Toronto, and his friend, Sir Robert Mond, of London. This library will probably reach Toronto next year.

THE DUNLAP OBSERVATORY

The Dunlap Observatory is nearing completion. The administration building is now finished and one of the smaller telescopes in it will soon be in place. The Director's house is ready. The building for the great telescope has been erected, and only the arrival of the lens delays the formal opening of this princely benefaction. Some time next year this will take place. The University of Toronto will then become one of the chief world-centres of astronomical research.

INSTITUTE OF RADIO-THERAPY

The University is deeply interested in the new Institute of Radio-Therapy, housed in the Dunlap Building in the Toronto General Hospital. Here the dread disease of cancer will be diagnosed and treated by radium and X-ray, and medical students will be more thoroughly trained to early and accurate diagnosis, on which the very possibility of cure or alleviation so largely depends. The establishment of this cancer clinic will undoubtedly stimulate research into the hitherto baffling problems of the cause and cure of this fell foe of mankind.

NEW CHAIRS

I am very thankful to report that two of the three new chairs for which I hoped last year have been established, the Chair of Chinese by the Governors, and the Chair of Fine Art by the Carnegie Corporation.

(*a*) The unique collection of treasures of Chinese art already housed in the Royal Ontario Museum, and the prospective arrival of the Dr. Mu Chinese Library of 50,000 volumes naturally indicate this University as a centre of Chinese and Japanese studies. The Board appointed to the Chair of Archaeology (Chinese) Dr. W. C. White, who for 38 years had been a missionary in China, and for the past 25 the Anglican Bishop of Honan. The Museum Trustees also appointed him as Keeper of the East-Asiatic Collection. No more fitting appointment could have been made. An erudite Chinese scholar, Dr. White had already won fame in China for his archaeological investigations. His recently published volume on "The Tombs of Old Lo-Yang" has been a landmark in Chinese Archaeology. No small part of the present collection of Chinese antiquities in the Museum has come through his discriminating purchases in China. The Museum will naturally become a laboratory for the study and interpretation of Far-Eastern life and culture. This new department will be concerned with studies bearing upon the languages, literature, art, industry, philosophy, religion and customs of our neighbours across the Pacific. By them it will be accepted as a gesture of goodwill and sympathy and will make for mutual friendliness and profit. In addition to the purely cultural aspect of the work to be done by this department it may indirectly promote commercial relationships between this Dominion and the vast growing markets of the Orient where dwells a population of 500,000,000 people.

This department of Chinese and Japanese will thus meet a real need. It can interpret China and Japan to Canada, and can prepare young Canada to see and seize the coming opportunities in the Far-East. I hope that every proper facility will be granted to Chinese and Japanese students who come to Canada to pursue their studies in this Toronto centre of art and culture.

(*b*) By the generosity of the Carnegie Corporation of New York, through its President, Dr. F. P. Keppel, it has become possible to establish the long talked of and much desired chair of fine art. After careful search and consideration, Professor John Alford, M.A., was appointed to this chair. A graduate of Cambridge, an art critic of eminence, and a lecturer for the Courtauld Institute of Fine Art in the University of London and for the Institute of Education in the same University, he comes well equipped by experience, education, and travel to be the first holder of this important position. I trust that he will well serve the aesthetic demands of the University and the Province. The history and interpretation of painting and sculpture and the philosophy of aesthetics which lies behind them will be the main themes of the lectures in this new department.

We have not yet been able to establish a chair in geography. Such chairs, I find, are established in most of the newer Universities in England. A department of geography would deal more adequately than is at present possible with both the geological and economic aspects of the field, and would be a valuable addition to the teaching force of our efficient department of economics.

CONCLUSION

May I add a few general considerations on university work?

1. The sciences and the humanities must never become strangers to each other. Natural science has rolled like a flood into school and university. Its attractiveness is so great as well nigh to be all-absorbing; its applications to life are so real and immediate as almost to exclude all other forms of mental exercise. But, as was said at the last meeting of the British Association for the Advancement of Science by Mr. H. T. Tizard, Rector of the Imperial College of Science and Technology, London, "No scientific man desires to see scientific education pushed to the neglect of literary studies; all of us recognise that a properly balanced diet for the mind is as important as for the body. What we do think is that science well taught can supply all that is best in the classical tradition". Some real synthesis of scientific and literary studies must continue to be made by a university, if its graduates are to be rightly described as educated men. In the Report of the University Commission of 1906, the last paragraph,—on "The Future of the University"—was written by Goldwin Smith. With singular prescience he said: "We have arrived at a critical juncture in the progress of University Education. The question presents itself whether the main object shall be, as it has hitherto been, intellectual culture, or the knowledge which

qualifys directly for gainful pursuits, and opens the student's way to the material prizes of life. The second object has of late been prevailing especially where commerce holds sway. The two, though distinct, need not be antagonistic. Science, properly so called, is culture of its kind, and those who pursue it may in turn imbibe the spirit of culture by association. We could not pretend, in confronting this great question, to forecast or regulate the future. We could do no more than provide a home for culture and science under the same academical roof, uniting them as far as possible, yet leaving each in its way untrammeled by the union". In this University I would fain believe that each has influenced the other and that each contributes to the other's completeness. Neither side of our common academic life can do without the other; both must grow freely, but each must complement the other. Mr. Goldwin Smith recognises that culture may come alike by the path of science and by the path of letters. Both may be so pursued as to teach accuracy and exactness, to give a discipline of clear thinking, to enable students to recognise differences in things which seem alike, to brace with difficulties minds which are not afraid of difficulties, and to inspire with beauty minds not insensitive to beauty. These words—the substance of the Headmaster of Rugby's praise of Greek—may be applied to the mental discipline given by both literature and science. The educational prescription here is not *either* one *or* the other, but up to the highest degree possible, *both* one *and* the other.

2. University education has both a preparatory and a compensatory function. It fits for efficient living; it also enables the individual to have resources within himself, to be good company for himself, to be a richer personality, even in face of external misfortune, loss or suffering. It plays no small part in helping a man to make wise, helpful, constructive use of his leisure. There will probably be more leisure for most people in the future than there has been in the past. The right use of leisure will be an acid test of its true value. Dr. L. P. Jacks has written wisely on the topic of "Education for Leisure". More than most men the university graduate should be able to make leisure minister to the broadening and deepening of his personality. Has not his university given him the company of great thoughts, the example of great achievements, the inspiration of great ideals, and the consolation of great failures? This is part of his education for leisure.

3. Perhaps the university's best gift to the nation is the type of man and woman whom it sends forth into the body social and politic. In the long run the entry of university-trained men into public life must be good for the country. There is need of good leaders and good followers (the latter are as essential as the former), citizens with ample knowledge, clarity of thought and courage of purpose. These requirements the university graduate should in some measure possess. He can contribute to his country (*a*) the spirit of progress, which has good hope that by knowledge and skill conditions can be improved; (*b*) the spirit of moderation, tolerance, caution, because it knows the complexity of problems and the weakness of one-sided and hasty expedients; and (*c*) the love of truth, which keeps the mind open to new ideas, which appreciates the value of systematised knowledge, and which holds prejudice in due control. To help towards the securing of an intelligent citizenship is to make a worthy contribution to the life and progress of the State.

4. The universities provide the highest training in the application of science to all departments of national life. They send out trained scientists to discover and to conserve our natural resources, and to improve and develop our methods of agriculture and industry, skill, vision, informed organising ability can turn our material possibilities into richer realities. In the realm of research, the quiet scholar is constantly seeking to widen the bounds of the known, to master the secrets of the universe, to control the great forces of nature. His researches may

any day lead to incalculable practical benefits to mankind, to the increase and cheapening of production, to wider distribution of the natural good things of the world, to the relief or prevention of suffering, and to the multiplication of the amenities of life for all. This is a service rendered by universities whose value is obvious to every one.

5. The wider dissemination of the proper kind of higher education is to-day one of the chief safeguards of democracy. Many of the social, economic, and political institutions which have been built on the foundation of liberty are being challenged in idea and in institution. We are told they have failed after the slow growth of a thousand years. Shall we quietly allow these principles by which we have evolved our best modern life to be thrown into the discard? Or, shall we defend them and show that they can be adapted to changed conditions; that we can remove injustice, privation, unhappiness, caused by new economic factors, without destroying the very foundations upon which our civilisation has been erected? It is of vital importance to our democracy that our citizens should have an accurate knowledge of our history, and of the real values in modern civilisation, and of the basic principles of freedom. What kind of education can best give this knowledge? Our British democracy will be best preserved by a diffusion of knowledge and by an increased sense of responsibility among the whole body of citizens. We seek a government which will be established, retained or dismissed by an informed and well-disposed citizenship. For the right kind of knowledge to meet the crisis men will more and more look to the universities. They have well been described as "clearing-houses for intelligent thought, free of political propaganda and open to diversity of views". The Faculty of Arts, which stands for a general liberal education, has here an especial contribution to make. It is the burden of the universities "to conserve freedom of discussion (under the natural self-imposed limitations of law and decency), to inform, to give understanding, to provide students with bases of judgment". The whole aim of the intellectual discipline of the university is to develop within the student himself understanding, a sense of values, and competency in his own field. It will become ultimately evident that sound learning, balanced judgment, and what General Smuts calls "creative freedom"—the ideals which the university seeks to impart—are the best preservatives of a sane democracy and a social individualism.

6. As the era of nation-building passes into the era of international co-operation, the creation and the fostering of an international outlook are tasks which naturally fall to the universities. A true patriotism is the basis of a true internationalism. Each nation makes the most of its own gifts and opportunities, while it grants the same right to others. Each has its own peculiar "glory" to bring into the one "City of God". There is need of both moral power and mental insight to make us to act as "national citizens of an international community". It is the duty and the privilege of the university to represent and to guide this great movement towards international understanding and co-operation. Knowledge is not tied by geographical bounds and speaks no single tongue. Philosophic interpretation and scientific truth are the exclusive possession of no one people. This is the underlying assumption of a university's existence and mission.

7. The ultimate aim of education, even the highest, is to teach us not merely to earn a good living, but to live (in Aristotle's phrase) "the good life". It must civilise us, make us civil persons; it must show us how to use the things of the mind, how to appreciate beauty; it must lead us to put both work and leisure to highest use. It must put the supreme emphasis on personality, on character, on goodness. It is more than intellectual acuteness and learning of books. The Great Examiner will be best satisfied with those pupils who enter manhood and womanhood listening for the call to service and duty, whose minds are undefiled and "whose morning faces are turned towards the light". Sir James

Jeans, the President of the British Association, this year, has well said: "The tragedy does not lie in man's scientific control over nature, but in his absence of moral control over himself". The moral control of the individual leads to the moral control of the state. The greatness of a state can be no greater than the character of the citizens. These aesthetic, moral and spiritual values no university worthy of its ideal can afford to neglect.

All of which is respectfully submitted.

(Signed) H. J. CODY,
President.

December 13, 1934.

APPENDIX A

(1) Report of the Principal of University College.
(2) Report of the Dean of the Faculty of Medicine.
(3) Report of the Dean of the Faculty of Applied Science and Engineering.
(4) Report of the Dean of the Ontario College of Education.
(5) Report of the Secretary of the Faculty of Household Science.
(6) Report of the Dean of the Faculty of Forestry.
(7) Report of the Dean of the Faculty of Music.
(8) Report of the Dean of the School of Graduate Studies.
(9) Report of the Dean of the Faculty of Dentistry.
(10) Report of the Director of the School of Hygiene.
(11) Report of the Librarian.
(12) Report on Research.
(13) Publications.
(14) Report of the Director of University Extension and Publicity.
(15) Report of the Director of the Department of Social Science.
(16) Report of the Director of the School of Nursing.
(17) Report of the Director of the Department of Military Studies.
(18) Report of Health Services.
(19) Report of the Warden of Hart House.
(20) Report of the Director of the Connaught Laboratories.
(21) Statement regarding the Museum of Archaeology.
(22) Statement regarding the Museum of Biology.
(23) Statement regarding the Museum of Geology.
(24) Statement regarding the Museum of Mineralogy.
(25) Statement regarding the Museum of Palaeontology.

(1) REPORT OF THE PRINCIPAL OF UNIVERSITY COLLEGE

(*Professor M. W. Wallace, M.A., Ph.D.*)

I have the honour to present my annual report for the session 1933-1934.

The number of students enrolled in the college has been slightly less than that of last year, but the decrease has not been great, and is adequately explained by the fact that the pass course now covers a period of only three years. No recent change in university policy has been more generally approved by the staff than the making of honour matriculation the standard of entrance to all arts courses. One result of the change has been that a certain number of students who would otherwise have come to Toronto go to other universities for their college training, but we have no reason to believe that we lose many students whose capacities and interests fit them for genuinely intellectual work. There is general agreement that the calibre of the whole student body has been improved by the change.

Once again during the past session our system of scholarships and bursaries has played a major rôle in promoting the cause of scholarship in the college. It should be the ideal of the provincial arts college to offer its facilities to every really able student in the province, and to exclude none from sharing those in facilities merely because of his lack of means. In some degree we are now approaching the realisation of that ideal. Our valuable matriculation scholarships have reached the number of twenty-six, and every year we are able to add to the number of prizes and scholarships which are open for competition throughout the undergraduate course. During the past session the income from the Leonard bequest to the College became available for the first time and was distributed as follows:

(*a*) Four matriculation scholarships of the value of $300 each.
(*b*) Four scholarships awarded at the end of the first year honours course, of the value of $250 each.
(*c*) One fellowship in the Graduate School worth $500.
(*d*) Bursaries of the total value of $700.

Two interesting and valuable additions to our list of prizes have been made within recent months by members of the undergraduate body. The Pan-Hellenic Association has established three prizes of $50 each available both in 1934 and 1935. These prizes will be awarded to the students securing the highest standing in the annual examinations of the pass course at the end of the first, second and third years. The University College French Society has established an annual prize of $25.00 in first year honour French, and has provided for its continuance throughout the next five years. We welcome with very special pleasure these evidences of undergraduate desire to encourage scholarly work.

The new Reading Room in the East Hall has filled an increasingly important place in the life of the students as they have become more accustomed to making use of its facilities. There are 138 chairs in the Reading Room, and occasionally none of them is vacant; always, the attendance is large. The students appreciate the great convenience of having a Reading Room within the College, the promptness with which books are furnished to them, the excellent lighting, the quiet.

The Alexander Lectures were given last February by Professor G. G. Sedgewick of the University of British Columbia on the subject *Irony*. Large audiences were present at each of the four lectures which were delivered in Hart House Theatre. During the coming session we hope to welcome as Alexander Lecturer Professor E. E. Stoll of the University of Minnesota. Professor Stoll is one of the foremost Shakespeare scholars of to-day, and he will address us on some Shakespeare theme.

Our Thursday afternoon public lectures given in the West Hall have become a fixed feature of our college year. During the Michaelmas Term of the past session Professor Will opened to visitors his fourth year course on French Literature of the Nineteenth Century: during the Easter Term seven lectures were delivered by Professors Norwood, MacCallum, Woodhouse, Knox, Brown, Will and Lange on various aspects of contemporary literary criticism. Next autumn we shall have a course of six lectures by Professor Brett on Contemporary Philosophy. During the Easter Term we propose to deal exclusively with Canadian subjects in some eleven lectures, many of which will be given by our colleagues in university departments.

In February the Literary and Athletic Society celebrated with an appropriate programme the eightieth anniversary of its foundation. In the late afternoon a debate was held in the West Hall, dinner was served to a large number of graduates and undergraduates in the Great Hall of Hart House, and an evening of reminiscences and song was spent in the Junior Common Room. The *Undergraduate*, a magazine which is published once a year by the students, gave a very creditable sketch of the history of the college and of its various societies. Among other distinguished graduates who were present were the Chancellor, the President, and Col. W. C. Michell, President of the Executive of the Alumni Association; Sir Robert Falconer was also present as the guest of the Society. In recognition of his past services to both the graduate and undergraduate bodies Col. Michell was elected to honorary membership in the Society. It was an honour that he prized very highly. Our whole college community was shocked and saddened by Col. Michell's untimely death which occurred on March 9th, 1934.

The Annual Dinner, followed by a Reception and Dance, was held on the night of Commencement Day, June 8, and was the occasion of a notable reunion of old graduates. Unfortunately, many were unable to secure places at the dinner. Dean DeLury presided—his last public appearance before retiring from his active work in the University—and the graduates used the opportunity to express their esteem and admiration of his great services both to the College and the University. The address of the evening was given by the Right Honourable W. L. Mackenzie King ('95) who was introduced by the Right Honourable Sir William Mulock ('63). Other distinguished graduates at the head table included the Right Honourable Arthur Meighen, the Honourable Vincent Massey and Sir Charles Saunders.

Whitney Hall and Hutton House are now practically taxed to their capacity to accommodate the women students who wish to live in the college, and the advantages of residence life are so great that very few students whose homes are outside Toronto choose to deny themselves these advantages, except those who are living with relations or family friends. Hutton House is occupied exclusively by students of the second year, but all meals are served in the Whitney Hall dining rooms—an average of 660 daily. The Residence Library, which was presented by the Alumnae Association, has proved to be of the greatest advantage to the residents. Between fifty and sixty volumes are taken out every day, and in spite of the extremely free system of operation the Librarian reports that in the two years which have passed since the Library was opened not one volume has been lost. Both graduates and undergraduates continue to show their interest in the Women's Union by gifts of various kinds. During the past session we have received from the Alumnae Association a new Nordheimer piano for the theatre, fifty Oxford Carol books, and two pairs of Sheffield silver candlesticks; the Women's Undergraduate Association have contributed $50.00 to be spent preferably on curtains for the stage. These are only the last of a long series of gifts for which the college is indebted to its women graduates and undergraduates.

Mr. George McGillivray has resigned his post as head of the Men's Residence on the occasion of his marriage. Mr. McGillivray has been tutor-in-residence for the last seven years, and has exercised an altogether excellent influence over successive classes of students. We are exceedingly sorry to part with him, but we regard ourselves as most fortunate in having persuaded Mr. A. F. W. Plumptre, lecturer in the department of political economy, to take his place.

The elimination of the roadway to the west of the college and the converting of the whole area into lawn, has revealed the beauty of the fine old elms which many a graduate remembers with affection as he recalls his student days. The approach to the college from Hoskin Avenue is now one of the most beautiful parts of the university grounds.

We are indebted to Mrs. A. D. Crooks for a Bible, formerly belonging to Professor H. H. Croft, on the fly-leaf of which is written the oath of office which he administered to members of the University Rifle Company. It is appropriate that the volume should now be found in the Croft Chapter House—the Senior Common Room. To the portraits of former members of the staff which hang on the walls of this room we have been able to add that of Professor St. Elme de Champ by Alan Barr which was presented to the Governors by Professor J. C. McLennan.

Professor F. C. Green of the department of French has been granted leave of absence for the ensuing Michaelmas Term in order that he may complete in Paris certain studies upon which he is engaged.

On May 9th, Queen's University conferred on Professor W. R. Taylor, head of the department of Oriental languages, the honorary degree of Doctor of Divinity.

(2) REPORT OF THE DEAN OF THE FACULTY OF MEDICINE

(*J. G. FitzGerald, M.D., LL.D.*)

The session 1933-1934 in the Faculty of Medicine has again been characterised by excellent team-work by members of all departments. There has been a thorough-going and determined effort to maintain the highest standards of productive scholarship and at the same time to provide suitable instruction in the medical sciences for the large body of undergraduates, this year numbering 798.

There was a reduction in the number of students registered in the first year, from 167 to 139. Had this total been considerably less there would have been more general satisfaction on the part of those responsible for teaching in the Faculty of Medicine. The serious disadvantages of the present large classes in the fourth, fifth and sixth years have been emphasised in the past two years by the heads of all clinical departments. Recommendations have been made by the Council of this faculty to provide alleviation from the present undesirable condition which, it is hoped, may soon receive sympathetic consideration and provide the basis for suitable action. This would be in the interest of the public, the medical profession and of present and prospective medical students. One hundred to one hundred and ten students in each of the first three years falling to ninety or one hundred in the three clinical years would relieve the present very severe strain upon the hospital facilities now available. Limitation of registration in the Faculty of Medicine in this University would, in the judgment of those who have given the question most serious and sustained consideration, be followed by very real advantages. I wish at this time to again recommend that such action be taken.

The continued reduction in university grants necessitating the complete elimination of funds for the support of research in the clinical departments is greatly regretted; a serious situation to which attention must again be directed. The importance and significance of recent advances in medicine are well known and generally appreciated. These advances have been made possible by generous support of research and investigation. Their continuation and extension will only be possible if suitable conditions obtain. These include appropriations for the work of the Committee for Experimental Research in Medicine. It is earnestly hoped that these may soon be forthcoming once more.

In the meantime the generous and helpful assistance provided by Sir Frederick Banting from the appropriations of the Department of Medical Research and of Professor C. H. Best from those of the Medical Research Best Fund are gratefully and appreciatively acknowledged. The Connaught Laboratories, also, have assisted in providing grants and research facilities. From these three sources it has been possible for the faculty to continue to provide conditions favourable for medical research. The fruits of such goodwill and genuine spirit of co-operation are not likely to be disappointing. The opening of the Ontario Institute of Radiology was a most significant event during the year. Extended reference to this new and important undertaking is made in the reports of the Departments of Radiology and Surgery by Doctor G. E. Richards and Doctor W. E. Gallie.

Faculty committees have been active and progressive throughout the year. Curriculum and Examinations under the chairmanship of Professor Duncan Graham, Library under Professor V. E. Henderson and Applications and Memorials under Professor F. B. (now Dean) Allan, among others, have been much occupied with faculty matters of importance. In this way consideration and study of questions of importance are thoroughly canvassed and explored before appropriate action is taken. This valuable but unobtrusive work receives but little general attention. It is here desired to acknowledge it with warm appreciation. In this connection, furthermore, it is especially appropriate to express to Professor Allan, thanks for many years unsparing and painstaking efforts as Chairman of the Committee on Applications and Memorials and at the same time to extend to him hearty congratulations upon his appointment as Dean of the Faculty of Arts.

Last year reference was made to the organisation of the Toronto Physiological Society. This continues to be a real vitalising influence; inter-departmental in scope; of value to graduate and undergraduate students and to members of the staffs of several departments in this faculty. The museum in the department of anatomy has been reorganised and greatly extended by Professor Grant and his colleagues. It is now, more than at any time in the past, a most valuable repository of material of great interest and importance. Many details of structure are susceptible of clear and lucid demonstration in judiciously chosen models and specimens. Professor Grant is to be congratulated upon having succeeded to a marked degree in the realisation of a most worthy objective.

This faculty believes firmly in the soul-refreshing practice of the cult of great men. To commemorate the life and work of the immortal Lister a celebration was held in Convocation Hall on April fifth. On that day the seventh Donald C. Balfour lecture in Surgery was given by Doctor William D. Haggard, professor of clinical surgery, Vanderbilt University Medical School. The title of Doctor Haggard's very interesting address was "The Seeds of Time". The lecture was well attended and greatly enjoyed. His Honour the Lieutenant-Governor, Doctor H. Bruce, emeritus professor of clinical surgery, very graciously and delightfully entertained at luncheon at Government House for Doctor Haggard and for the President of the University, the heads of departments and others.

This year, Professor James Ewing of the department of oncology, Cornell University, and Director of Cancer Research, Memorial Hospital, New York, was awarded by the Senate the Charles Mickle Fellowship. This Fellowship is given under the terms of the deed of gift of the benefactor, "to that member of the medical profession who is considered by the Council of the Faculty of Medicine to have done most during the preceding ten years to advance sound knowledge of a practical kind in medical art or science". Professor Ewing's activities in the field of cancer research thoroughly justify this action and is but one of many distinctions which have come to him.

Recognition has, during the year, come to various members of the faculty. Outstanding among these and thoroughly merited was the honour paid to Professor Perry G. Goldsmith in his selection as President of the American Laryngological, Rhinological and Otological Society. Doctor Goldsmith was also invited to deliver a series of lectures during the spring of 1934 at the Gill Memorial Hospital, Roanoke, Virginia. Professor Duncan Graham was signally honoured and his colleagues and friends greatly pleased by his election to Fellowship in the Royal College of Physicians of London. This is an especially noteworthy award as Professor Graham previously was neither a licentiate or member of the College. On the occasion of His Majesty's birthday honours Professor Frederick Grant Banting was made a Knight Commander of the Order of the British Empire for distinguished service to science and humanity. This award was received with popular acclaim and throughout the length and breadth of this and other countries, the great contribution of Sir Frederick Banting to the alleviation of human suffering was recalled with gratitude.

Professor C. H. Best in January was highly honoured in being invited to deliver lectures at Cambridge University and the University of London. Professor V. E. Henderson and Professor G. H. W. Lucas received further recognition of their work in the field of anaesthesia. Doctor K. C. McIlwraith was made emeritus professor of obstetrics, a well-merited reward for many years of faithful service. Honorary Fellowship in the Royal College of Surgeons of England was conferred on Sir Frederick Banting in October 1933. The Dean of the Faculty was invited by the President of the Rockefeller Foundation to visit India, Ceylon and Egypt, during the winter, as a member of a small commission visiting those countries on behalf of the Foundation. The Dean was again chosen as a member of the Health Committee of the League of Nations for a three-year period, and elected Chairman of the Scientific Directors of the International Health Division of the Rockefeller Foundation for the year 1934. During the year Thomas Motton, for forty-three years a faithful member of the non-academic staff of the University, retired on pension. As caretaker of the medical building for thirty years he was well and affectionately known as Tom to a host of students and to many past and present members of the teaching staff. May he long enjoy well earned years of leisure.

From the headship of the department of therapeutics Professor R. D. Rudolf retired on June 30th, 1934. Professor Rudolf has in more than one capacity served the University through this faculty with great loyalty and devotion. For many years a teacher of clinical medicine who commanded the respect and regard of his students, he has in recent years devoted himself to furthering the interests of therapeutics. His work and efforts are here most gratefully acknowledged. Doctor Gilbert Royce has, after many years of unselfish service, retired as associate professor of oto-laryngology. The thanks of the faculty and all best wishes for the future are extended to him on behalf of the Council of this faculty. Doctor H. E. Clutterbuck and Doctor C. H. Hair have retired from the staff in the department of surgery. Their services as clinical teachers have been much appreciated and the thanks of the faculty are extended to each of these gentlemen. Grateful acknowledgment, too, is made of the gift to the library of the late Mr. I. H. Cameron, professor emeritus in surgery in this University. Also of the gift of Doctor Frederick John Poynton of London, England, of the original manuscript of his book on the etiology of rheumatism (acute rheumatic fever). This unique contribution is highly prized and the kind offices of Doctor George Pirie of the staff in paediatrics, in this connection, is warmly appreciated.

Extra-mural post-graduate lectures under the aegis of the Canadian Medical Association and of the Ontario Medical Association have been given by many members of this faculty as for a number of years past.

It is with deep and abiding regret that the death of the following members of the University staff or students in this faculty must here be chronicled: Professor B. A. Bensley, for twenty years professor of zoology and head of the department of biology. A colleague and teacher held in the highest esteem, his sudden passing was a great shock. Mr. I. H. Cameron, emeritus professor of surgery and former head of the department, died December 15th, 1933. A distinguished scholar, honorary fellow of the Royal Colleges of Surgeons of England, Scotland and Canada, Mr. Cameron for many years occupied a unique place in the medical profession in this country. His many former students will mourn the death of a scholar and gentleman who stood for all that was best in the profession of medicine. Doctor F. A. Cleland, a former assistant professor (1922-1928) of obstetrics and gynaecology, died November 26th, 1933. Doctor Cleland was an excellent teacher, a fine surgeon and a most lovable man. His death has brought sorrow to his former colleagues and friends in this faculty. Doctor W. H. Dickson, associate in radiology, died suddenly on October 30th, 1933, at a very early age. He was an exceedingly valuable member of the staff and a man of great energy with much charm of character. His loss we sincerely mourn. John H. C. Copp, fourth year medical student. John Copp's tragic death in December, 1933 cast a deep gloom over the whole University and this faculty lost a student of splendid character and attainments. Doctor W. J. Hendry, Ellen Mickle Fellow for 1933-1934. "Jack" Hendry's sudden death in Johns Hopkins Hospital during his tenure of the Ellen Mickle Fellowship caused profound sorrow and regret among a wide circle of friends in this faculty. A brilliant student at the threshold of a career of great promise, his passing is profoundly regretted. Doctor H. S. Hutchison, assistant professor of medicine, died with startling suddenness on January 6th, 1934. He was an excellent teacher, a fine clinician, a splendid man and his large circle of friends and colleagues feel deeply the loss of a well-loved and loyal associate.

Last year the retirement of Doctor F. N. G. Starr from the Faculty of Medicine and his appointment to the Board of Governors of the University was announced. After a very brief illness Doctor Starr died on April 21st, 1934. For those at any time associated with the Faculty of Medicine during the past thirty-six years it is difficult to realise that one so long active in the teaching and practice of medicine is no longer with us. A surgeon with an international reputation, Doctor Starr combined very unusual qualities of heart and mind which endeared him to a host of students as well as to his colleagues and close associates. His services to this faculty, to the promotion of the best interests of medicine and to community welfare will not quickly be forgotten. His death has caused a host of living friends to mourn his loss.

Just after the close of the session 1933-1934, on July 5th, Victor John Harding, since 1920 professor of pathological chemistry, died after a long illness borne with great courage and fortitude. Professor Harding was an able teacher, an excellent investigator with a fine original mind. He was, despite long-continued and serious disability, active and vigorous in the prosecution of research in his own field. For many years as Chairman of the Microscope Committee and in various other ways he rendered splendid service to this faculty. His early demise is a great loss to the University as it is also the source of great sorrow on the part of his colleagues and friends. Professor A. B. Macallum a former member of this faculty, died in London, Ontario on April 8th, 1934. Professor Macallum was a physiologist and biochemist of great distinction with a world-wide reputation. He was for twenty-seven years exceedingly active in the affairs of this University. His death is deeply regretted.

The Canadian Medical Institute has donated a prize of twenty-five dollars to that student in the sixth year in medicine who is adjudged to have written the best essay on the value of an Annual Periodic Health Examination. This contribution is appreciated and thanks are expressed to the donors.

(3) REPORT OF THE DEAN OF THE FACULTY OF APPLIED SCIENCE AND ENGINEERING

(*C. H. Mitchell, C.B., C.M.G., C.E.*)

It is gratifying to again record a very successful academic year in the Faculty of Applied Science and Engineering. The work of the staff and students alike has been maintained at the high standards which have been increasing during the past few years, and the serious attention and application of the students to their work has again been noticeable.

In point of attendance, as disclosed by the registration at the commencement of the session, the number was slightly decreased, being 883, to be compared with 913 recorded the previous year. It thus does not appear that the continued depression has had much effect, in so far as numbers seeking an applied science education are concerned.

A feature of the student attendance which has caused some concern, however, is the manner in which the incoming first year distributed itself among the seven graduating departments in a quite unexpected manner. The two extremes, out of a total first year class of 226, being, at the one end, only 11 in civil engineering and at the other 81 in chemical engineering, presented such a disproportion as to cause the Council of the Faculty to give it serious thought and bring the situation to the special attention of the Board of Governors. First year registration in the other engineering departments was:—35 in mining engineering, 39 in mechanical engineering, 43 in electrical engineering, and 8 in metallurgical engineering, with 9 in the school of architecture. It is hard to orient these disproportionate figures with the situation in the country, even at this time and looking to the return of engineering activity to be expected in the near future. It is quite obvious, for instance, that too many are crowding into chemical engineering, while not nearly enough are offering for civil engineering, if regard is to be had to the probable requirements three or four years hence.

With reference to numbers, however, the feature which promises greatest difficulty from the university point of view, is the lack of accommodation in some of these crowded departments. It is still acute and even more so in chemical and mechanical engineering, where, as was reported last year, very considerable difficulty had already arisen from crowded conditions. The increasing danger of impairing the teaching efficiency is again drawn to attention and it is to be hoped that the Board of Governors will continue to keep the urgent accommodation requirements of this Faculty constantly before them, especially in respect to these two departments.

It was most gratifying to the Council of the Faculty, and indeed to the students and graduates, to learn, at the commencement of the session, of the magnificent bequest of the late Miss Marie Wallberg, in which there is promise for the future of an appropriate memorial to her brother, the late Emil A. Wallberg, a Canadian engineer who had a high regard for university education. While, for the time being, this splendid gift cannot be realised, its expressed intention to provide for a new building with equipment or other useful benefaction, possibly in research or scholarships, has created renewed encouragement for expansion and the stimulation of both staff and students, arising from its announcement, has been quite marked. Some benefit has already resulted, though only as a temporary measure, by the utilisation of a portion of the accruing interest for loans to worthy students in need of financial assistance to complete their courses.

With the passing of another year of the depression, or rather with the passing of the depression itself so far as Canada is concerned, the improvement with respect to the employment of engineers is quite noticeable. It is gratifying to observe that the absorption of this year's graduating class has already been 20 or 25 per cent. greater than that of last year at this date (30th June). In view of this returning demand for applied science graduates, there need be no apprehension as to their employment as conditions improve in the country. The re-employment of those graduates of former years who have suffered from the depression has likewise greatly increased.

With respect to the curriculum in this Faculty, a new step has recently been taken which promises well; this is the establishment of a new graduating department to be known as engineering physics. The general provisions for establishing the course and the first year curriculum to be taken into use next session, was unanimously passed by the Council of the Faculty and has been approved by the Senate. It involves a close cooperation between several departments of this Faculty with those of mathematics and physics in the Faculty of Arts, and looks toward the production of an engineer-physicist, a type of graduate which it is thought will be in some demand in the industries and in research organisations.

Standards of instruction have been still further raised by putting into effect the higher examination requirements referred to in last year's report. With the completion of the present session and the commencement of the forthcoming one, the recently announced requirement of an average of 50 per cent. for passing written examinations is enforced, and the requirement that a student will no longer be able to carry supplemental examinations into the next higher year is being made effective; in other words, the student must pass all of the examinations of one year before proceeding with the next.

The School of Engineering Research has continued its valuable work, despite the continued withdrawal by the University of research funds which formerly were available. The School was very fortunate, however, in the result of the appeal it made for support for one very special research in electrical engineering then nearing completion and now concluded, which it is expected will prove of great advantage in connection with the operation and control of large hydro-electric transmission systems. It is hoped that this research will before long be recognised as providing a great step in this field, and that the credit which will accrue to the University will provide the reward for the response of the Board of Governors for enabling this particular research to proceed to conclusion at this time.

Notwithstanding the withdrawal of funds for those other researches which had previously been pursued, it is most gratifying to report that thirty such researches were carried out in five departments of the Faculty. Most of these were in continuation of researches which had already been in progress, but a number of new ones upon useful, and in some cases pressing, subjects, were undertaken with a view to at least making a commencement, notwithstanding the difficulties consequent upon having no research funds available. Attention is especially directed to this most commendable effort on the part of members of the School of Engineering Research under these circumstances. The report of the School, describing these thirty researches, is forwarded herewith, being submitted in the hope that the enthusiasm and industry of the members of the staff of this Faculty in this regard will be so recognised that research funds will shortly again be available to them, and which will be a new stimulus to proceed on their former scale.

With the conclusion of this session, this Faculty, and the University, will lose the valuable services of two senior professors who are forced to retire on attaining the age limit. Professor G. R. Anderson, who has been a member of the staff for thirty years and who for over twenty years has been head of the department of engineering physics and photography, has rendered most useful service in those fields.

In the retirement of Professor C. H. C. Wright, the University as a whole, and this Faculty in particular, loses a member who has given a lifetime of outstanding service, not only in his own particular field, but in many phases of faculty and university activities. He has been a member of the staff for forty-six years, and for a great part of that time has been the head of the department of architecture, which has now become nationally known as the school of architecture. His great abilities as an able teacher, wise counsellor, and tactful administrator will always be remembered by his colleagues and the hundreds of graduates in architecture as well as by the thousands of graduates of the faculty.

(4) REPORT OF THE DEAN OF THE ONTARIO COLLEGE OF EDUCATION

(*Dr. Wm. Pakenham*)

The registration of the session, 1933-4, was slightly lower than that of 1932-3 when it was the highest in the history of the College. Inclusive of the extramural students the total number registered in the courses for teachers was 1000 as against 1101 in 1932-3. The decrease may be explained by the increase in tuition fees and by the relative scarcity of teaching posts. In view of the limited accommodations and equipment of the College and of the surplus of certificated teachers in the Province, a further decrease in 1934-5 is to be desired if not expected.

During the session the department of educational research made marked progress in the preparation of its series of standardised proficiency tests for the various Canadian school grades. The department has also done a year's valuable work in the examination of the methods of learning and teaching in schools languages other than the vernacular. These two researches, conducted with the financial aid of the Carnegie Foundation will no doubt make valuable contributions to public education. And they are only two of the many researches that should be made into the problems of the content and methods of modern education.

The registration in the librarians' course was 42 and the demand for trained librarians for the public and special libraries of Ontario was relatively satisfactory. Annual increases in the number of the students in the librarians' course who are bachelors in arts and the need of special or advanced training in addition to the standardised one-year course will raise the question of university recognition of the courses in library science. Some universities on this continent recognise these courses as courses for graduate degrees under the conditions that obtain with other graduate courses; other universities have instituted a special degree of bachelor of library science. The University of Toronto will probably be urged to consider this problem in the near future.

In submitting this brief report upon his last session in the Ontario College of Education, the Dean ventures to place on record his appreciation of the loyal and efficient co-operation of his colleagues throughout the twenty-seven sessions of the College's history. To this loyalty and efficiency is due such success as the College may have achieved.

(5) REPORT OF THE SECRETARY OF THE FACULTY OF HOUSEHOLD SCIENCE

(*Professor C. C. Benson, Ph.D.*)

With this session the division of students in this Faculty into honour and pass groups will disappear and by next session all four years of the course which began in 1931 will be offered. This provides one course for all students of first and second years, with the choice of graduation at the end of the third year for those desiring a limited amount of training; or at the end of the fourth, for those looking for non-professional training for teaching or for hospital dietetics.

This arrangement seems likely to be satisfactory, for with the change of matriculation requiring honour work from all students and allowing them to enter the Faculty of Arts without Latin of senior matriculation, the registration in this Faculty is likely to be small. Many of the students have registered for the Bachelor of Household Science degree in the past because they were entitled to enter with pass matriculation only and without Latin.

As we had anticipated, the registration of this session was less than that of last. The students again included a group from Macdonald Institute, most of whom registered in the graduating year, but two of them enrolled in the third year intending to go on with the fourth year of special work.

It has again been possible to give the Macdonald students of the graduating group special work for some of their classes and again with satisfactory results.

The examination returns in general, show a better grade of work from all students and we are glad to have fewer failures to report. Of the five candidates who failed to complete the work of their respective years, three were repeaters, and in all cases the chief difficulty was the candidates' inability to reach the total of 60% which is required.

For the immediate future the registration is not likely to be large, for students of honour grade desiring household science work will now, probably, take the course in household economics, while those who are uncertain of obtaining an average of 60% of the marks available at examination will have a better chance of success in the pass course in arts with options in science and in household science. The large classes in the second year of household economics and of the pass course in arts with household science option is, no doubt, due to such a distribution.

We expect, however, to have a number of students in our third and fourth years who will come to us to complete work for the degree after taking earlier training at Macdonald Institute. We look, also, for students who wish to come to the University from the technical schools and are without Latin; for others who wish a three years course with more household science work than the pass course in arts can offer, and for still others who may be coming to us from other universities. It is much easier to make provision for such students in this faculty than to fit them into the regular courses in the faculty of arts.

There have been no new appointments to the teaching staff of the Faculty during this session, but corresponding to the smaller registration the number of appointments has been reduced.

The building is still crowded since the arts classes are large but the congestion has been considerably relieved.

(6) REPORT OF THE DEAN OF THE FACULTY OF FORESTRY

(*Dr. C. D. Howe*)

The registration in the Faculty during the year reflected the effect of curtailed opportunities in forestry work due to the general business conditions. The entrance class was one half the size of that of the previous year and the total registration eleven less in number. However the improvement of conditions during the academic year has manifested itself in the much greater employment of the graduates and undergraduates. Last year not over ten per cent. of the students found employment in actual forestry work but this year the percentage of employment has risen to sixty-six.

The inability to fill the place of the late Professor Millar threw an extra load upon the already over-worked staff and disrupted the normal work to a considerable extent. While the provision for special lecturers in certain subjects was a success and well worth-while such a method can only be regarded as supplementary to the work of the permanent members of the staff. The men giving the short courses of ten lectures each were Kelvin Stewart, Frank Sharpe and H. E. Kedey of the Ontario Forestry Branch, J. D. Gilmour of the Anglo-Canadian Pulp and Paper Mills and B. F. Avery of the Abitibi Power and Paper Company. We are much indebted to the Provincial Government and to the pulp and paper companies for loaning these men to us.

(7) REPORT OF THE DEAN OF THE FACULTY OF MUSIC

(Dr. E. C. MacMillan)

During the session 1933-34 the number of students registered was 34, in the course leading to the degree of Bachelor of Music; 8 registered in the first year, 13 in the second year and 10 in the third year, occasional students, 3.

The following lectures were given by members of the faculty of music:

H. A. FRICKER, ESQ., M.A., Mus.Doc.:
For Students of All Years—
January 5—"Form in Choral Music."
January 12—"The Romantic Spirit in Music."
January 19—"The Orchestra of J. S. Bach."
January 26—"Interpretation of Choral Music."

H. WILLAN, ESQ., Mus.Doc.:
January 8—"Combined Counterpoint" (2nd and 3rd years).
January 15—"Fugal Construction" (2nd and 3rd years).
January 22—"Modulation" (1st and 2nd years).
January 29—"Modulation" (2nd and 3rd years).

ERNEST MACMILLAN, ESQ., B.A., Mus.Doc.:
February 2—"Elementary Harmonisation of Melodies" (1st and 2nd years).
February 9—"Free Contrapuntal Writing" (2nd and 3rd years).
February 16—"Brahms' Third Symphony" (3rd year).
February 23—"Schumann's Carnival Pranks and Walton's Portsmouth Point Overture" (3rd year).

L. SMITH, ESQ., Mus.Doc.:
February 5—"Figured and Unfigured Basses" (1st and 2nd years).
February 12—"Figured and Unfigured Basses" (2nd and 3rd years).
February 19—"Analysis" (2nd year).
February 26—"Analysis" (2nd year).

The organ recitals in Convocation Hall this season numbered eight, the first four being given by Dr. Healey Willan, University Organist, commencing October 31st and fortnightly thereafter until Christmas. On January 30th, Dr. E. C. MacMillan, on February 13th, Mr. Maitland Farmer, on February 27th, Mr. Frederick Silvester and on March 13th, Dr. F. L. Harrison, of New Glasgow, N.S., gave organ recitals, which were very much enjoyed by the students.

Bach's "St. Matthew Passion" was performed in Convocation Hall on March 28th by the Conservatory Choir. The Conservatory Choir has also sung Pierné's "Children's Crusade" with the Toronto Symphony Orchestra, and contributed to the celebrations of Toronto Centennial Music Week by singing Beethoven's "Choral Symphony".

The Conservatory String Quartet, in a series of chamber concerts, has made a valuable contribution to the musical season and the series of Student Concerts given by the Hart House Quartet in Convocation Hall has been a source of inspiration to the hundreds of students who have attended. Numerous students' recitals have been given in the hall of the Conservatory.

Mr. J. L. Richardson is continuing his series of carillon recitals from the Memorial Tower during the summer months. The Sunday evening and Friday afternoon concerts arranged by the Music Committee of Hart House have once more proved themselves a valuable factor in stimulating interest in music among university students.

The number of candidates entering for the examinations of the Toronto Conservatory of Music for the present season has been 13,799 as compared with 14,595 for the season 1932-33. Entries for the year were distributed as follows: Piano, 6,908; Violin, 404; Singing, 274; Sight-Singing, 13; Organ, 40; Violoncello, 2; Viola, 1; Elocution, 18; Theory, (Rudiments, History, Harmony, counterpoint Form) 6,139.

(8) REPORT OF THE DEAN OF THE SCHOOL OF GRADUATE STUDIES

(Professor G. S. Brett)

During the session 1933-34 the number of students registered in the School of Graduate Studies was 720. As compared with the number for the previous year (731) this indicates a decrease of 11, and shows a marked difference from last year when the numbers increased by 74. The number of students resident in the Province of Ontario increased from 550 to 555; of these 328 were from Toronto and 227 from other parts of the Province. The distribution throughout the Province is shown elsewhere (p. 145). Students from other Provinces of Canada were distributed as follows:—Saskatchewan 28, Nova Scotia 16, Manitoba 16, British Columbia 15, Alberta 14, New Brunswick 11, Quebec 9, Prince Edward Island 5. The total number of students from all parts of Canada other than Ontario was 114; this figure is instructive as an indication of the contribution which the University of Toronto makes to the highest grades of education in Canada. Students from other countries numbered 51, including 30 from the United States, 9 from Great Britain, 1 from India, 2 from New Zealand and 5 from Europe. The number of institutions represented in the Graduate School was 62. Out of the total registered 181 held staff appointments: 457 took their first degree in Toronto.

The distribution of the candidates for different degrees was as follows:

	Men	Women	Total
Candidates for Ph.D.	133	19	152
Candidates for M.A.	147	82	229
Candidates for M.S.	8	...	8
Candidates for M.A.Sc.	14	...	14
Candidates for C.E.	2	...	2
Candidates for E.E.	3	...	3
Candidates for D.Paed.	93	13	106
Candidates for M.Sc.F.	4	...	4
Candidates for M.S.A.	12	...	12
Candidates for M.Sc. (Dent.)	3	...	3
Candidates for M.V.Sc.	1	...	1
Candidates for D.V.Sc.	1	...	1
Candidates for Mus.Doc.	1	...	1
Graduate Students	90	94	184
	512	208	720

The distribution of the candidates according to their major subject was as follows:—Anatomy 1; applied mathematics 3; anthropology 2; astronomy 1; biochemistry 18; biology 35; botany 20; chemistry 34; chemical engineering 14; civil engineering 1; classics 12; dentistry 3; educational theory 6; electrical engineering 5; English 67; epidemiology and biometrics 1; food chemistry 5; forestry 6; geology and palaeontology 15; Germanic languages 11; history 37; household science 8; hygiene and preventive medicine 2; law 19; mathematics 16; mechanical engineering 1; mineralogy 3; mining engineering 2; music 1; pathology and bacteriology 5; pathological chemistry 8; pedagogy 106; pharmacology 1; philosophy 47; physics 32; physiology 7; political science 33; professional degrees 5; psychiatry 1; psychology 64; romance languages 26; semitics 13; surgery 8; veterinary science 2.

The number of students recommended for degrees this year was as follows:—

Ph.D.	36
M.A.	108
M.S.	1
M.A.Sc.	14
C.E.	1
E.E.	3
D.Paed.	3
D.V.Sc.	1

Fellowships:—The Scholarship Committee received a large number of applications (42) for the Open Fellowships of which there are four only. Awards were made with a view to the best possible distribution among departments of the University and provinces, all being given outside of Ontario: the successful candidates were:—

M. M. Ross, B.A. New Brunswick: department of English.
L. D. MacDonald, B.A., B.Sc. Dalhousie, M.A. Toronto: department of philosophy.
G. F. Clark, B.Sc., M.Sc. Saskatchewan: department of physics.
Miss J. F. L. Hart, B.A., M.A. British Columbia: department of biology.
(Special grant) C. Unruh, B.A. Acadia: department of chemistry.

Appointments to other fellowships made by the Committee of the School were as follows:—

Alexander Mackenzie Fellowships:—
W. T. J. Easterbrook, B.A. Manitoba: department of political science.
Miss A. M. MacLaren, B.A. Western Ontario: department of history.

Appointments to other fellowships tenable in the School of Graduate Studies have been made as follows:—

War Memorial Fellowships:—
W. G. Fletcher, B.A. McMaster.
Miss M. M. Roseborough, B.A. Alberta & London, M.A. Toronto.
Nipissing Research: I. J. W. Johnston, M.A.Sc.
William Southam Memorial: W. R. Wees, M.A., B.Educ. Alberta.
Maurice Cody Fellowship: F. W. Burton, B.A. Toronto, A.M. Harvard.
Leonard Fellowship: Miss M. C. Bodwell, B.A.

In spite of any improvement that has taken place in the economic situation, many students find difficulty in meeting the expenses of graduate study and some find the problem insoluble. A reduction in numbers is not to be regretted on the whole, but it is unfortunate that students of the best calibre should be unable to develop their talents. This situation can only be remedied by more adequate resources for scholarships, which not only extend the privileges to more students but also set a premium on the ability and attainments of those who undertake more advanced work. A very considerable number of students hold staff appointments which give opportunity for work leading to degrees: this fact should not be overlooked, but the recent increase in fees and partial reduction of the exemptions granted has in some cases created difficulties for those who hold positions as demonstrators or class assistants.

It seems desirable to have a record of the graduate students who obtain scholarships or fellowships in other institutions. There is considerable difficulty in making this information complete, but so far as the facts are known the list is as follows:—

S. Levine (physics), Scholarship, in Cincinnati.
Miss H. B. McKee (classics), Scholarship, in Michigan.
Miss E. B. Burton (germanics), Scholarship, in Bryn Mawr.
J. Embree (anthropology), Scholarship, in Chicago.
A. H. Johnson (philosophy), Scholarship, in Chicago.

G. A. Smith (history), Scholarship, in Cornell.
E. S. Pentland (biology), Scholarship, in Alberta.
L. B. Pett (biochemistry), Royal Society Fellowship.
A. G. Bailey (history), Royal Society Fellowship.
M. F. Crawford (physics), Royal Society Fellowship.
Miss E. K. M. Sims (history), Gertrud Davis Exchange Scholarship.
Miss M. E. McCabe (romance languages), Scholarship Ontario Government, for study in France.

The Dean attended the annual meeting of the Association of American Universities at Princeton University, October 1933, and at the request of the Secretary presented a paper which is included in the Journal of Proceedings and Addresses. The Dean also attended the meeting of the Association of Canadian Universities at Hamilton in May 1934, and read a paper on Graduate studies in the Arts and Sciences.

(9) REPORT OF THE DEAN OF THE FACULTY OF DENTISTRY

(*Wallace Seccombe, D.D.S.*)

During the past few years there has been a gradual reduction in the number of undergraduate students in this Faculty and this same trend has been observed in practically all of the dental schools on this continent. Our classes included nine students from United States and twenty-three students from Western Canada. In the fifth year there were in attendance one graduate from the University of Montreal, one from the University of Maryland, one from Otago University and one from Guy's Hospital, London.

Smaller classes have enabled the staff to further develop graduate study and research. Three British dentists registered for post-graduate work during the session.

Twenty-five young women were registered in the Dental Nurses' course, of which twenty-two were awarded the diploma of the Royal College of Dental Surgeons of Ontario.

I have had the honour during the past three years of being Chairman of the Dental Curriculum Survey of the American Association of Dental Schools. This Survey has been an extensive educational project financed by the Carnegie Corporation. First, an effort was made to obtain a comprehensive view of the needs and requirements for dental health service. This was done through a study of dental literature and through questionnaires sent to laymen, physicians, public health officials, and dentists. The types of oral diseases, disorders, and deficiencies were ascertained; studies were made of the services required of dentistry in its new relationships; and the objectives of undergraduate dental education were formulated.

Subcommittees of dental teachers used the facts ascertained regarding the needs and requirements for dental health service as a basis for outlining the instruction in the various clinical courses to be taught to dental students. Later another group of subcommittees outlined the instruction in the preclinical courses which are needed to provide a proper background for clinical study. In all of this work a determined effort was made to correlate the various courses of the entire curriculum.

With the assistance of two deans engaged in education in the liberal arts and sciences, the Committee outlined suggested requirements for admission to dental schools.

We have found the Survey of much value in the development of the dental curriculum in this University and we have already appointed a number of committees to study the final report of the Survey and to consider how its recommendations might be applied to dental education in this University.

(10) REPORT OF THE DIRECTOR OF THE SCHOOL OF HYGIENE

(*J. G. FitzGerald, M.D., LL.D.*)

This is the seventh annual report of the School of Hygiene. The work of the session 1933-34 is briefly reviewed herein.

Last year extended reference was made to the fact that the completion of the present Hygiene Building, including easterly and northern additions, was made possible by contributions from the Connaught Laboratories aggregating nearly four hundred and fifty thousand dollars. The fact that each year research grants amounting as a rule to not less than fifteen thousand dollars are derived from the Laboratories' funds for the support of research projects in departments of the School of Hygiene should here be reported. These sums, with the interest on the Rockefeller Foundation School of Hygiene endowment amounting to eight hundred and fifty thousand dollars, provide entirely for the maintenance of all departments of the School, save hygiene and preventive medicine. Appropriations for this latter department are included in those for the Faculty of Medicine.

The university departments comprising the School are at present as follows: Hygiene and preventive medicine (also a department of the Faculty of Medicine); epidemiology and biometrics; physiological hygiene; and the sub-department of chemistry in relation to hygiene. In all of these graduate and undergraduate instruction is provided. In addition, of course, investigations are carried on in those aspects of bacteriology, immunology, physiology and biochemistry, epidemiology and statistics, immuno-chemistry and physical chemistry that bear upon the field of preventive medicine and public health. Generally speaking, the researches are directed to the solution of the many and varied problems which reveal themselves in the prosecution of everyday activities in preventive medicine. There are in addition, however, not a few questions of abstract scientific interest which serve to intrigue those members of the staff attempting to obtain answers thereto.

In the early years of the life of a School responsible for the development of scientific and professional personnel for public health work in a country where progress is very rapid, as is the case in this Dominion, an attempt must be made to establish and maintain high standards of training and preparation. Two groups or categories of students have to be provided for, those who are to be prepared to contribute substantially to increasing knowledge of preventive medicine in the years to come, and those responsible for the conduct of routine public health, in all its aspects, both at the present time and in the future. The outlook and attitude of mind of workers in these groups must be thoroughly scientific, objective, critical and experimental. Those disciplines which will strengthen such a mental outlook must receive extended consideration. Public health, however, has additional responsibilities which necessitate contact with community organisations providing other essential social services. With the principles and methods of such agencies, the public health worker must have some familiarity. The student then, in his practical work, should be introduced, indeed made familiar with, all the social and health resources of the community in their many and widespread ramifications. This is possible in this School of Hygiene, thanks largely to the attitude of goodwill displayed by members of the Department of Health, Ontario, of the Department of Public Health of Toronto, and of other official and voluntary health and social agencies. To all of these the School is deeply indebted and sincere acknowledgement is here made of this generous assistance and cooperation.

The registration of graduates of many Canadian universities as students in this School has been in the past and continues to be a source of satisfaction. Of the seventy-six medical graduates who have completed the curriculum leading to the diploma in public health since 1927-28, no less than twenty-nine have come from Laval University and the University of Montreal. Such a large enrolment from the Province of Quebec of graduates of French-Canadian universities has had many results of substantial importance and value from both a national and a public health standpoint. Other Canadian universities have also sent their quota of students. This year in the diploma in public health course thirteen students (all graduates in medicine) were registered and they came from New Brunswick, Quebec, British Columbia, Ontario and from the State of California. It was an unusual pleasure and privilege this year to have with us in the course, as a Rockefeller Foundation fellow, a member of the academic staff of Stanford University Medical School. In this instance both staff and students enjoyed the benefit of association with a particularly brilliant graduate of a great university in the United States to which not a few graduates of this university have been drawn in years past.

Students completing their work in the courses leading to the diploma in public health have all found appointments in the field, in public health laboratories or in universities. One graduate received an appointment as a Surgeon-Lieutenant in the Royal Navy. Altogether seven students were in attendance as Rockefeller Foundation and three as Connaught Laboratories fellows.

The largest number of graduates since the opening of the School of Hygiene completed the work leading to the degree of doctor of philosophy in departments of the School which are also units in the School of Graduate Studies. These students, four in all, are now engaged in whole-time academic work, research and teaching or both. One other student obtained the degree of master of arts in epidemiology and biometrics.

As in previous years laboratory and didactic instruction in preventive medicine for undergraduates in the fifth year in the Faculty of Medicine has been carried on.

Students enrolled in the School of Nursing, in the Faculty of Household Science and in the Faculty of Arts have also received courses of instruction in the School of Hygiene.

The research activities of members of the staff which have culminated in the publication of scientific communications are referred to in the report of the Director of the Connaught Laboratories to be found elsewhere in this volume.

We have again enjoyed receiving visitors from many countries including West Africa, Australia, China, Denmark, England, Federated Malay States, France, Germany, India, Japan, Java, Jugoslavia, Newfoundland, Scotland, Siam, Syria; from many states in the United States and from six Canadian provinces. For varying periods of time, these visitors have observed the work of the School and of the Connaught Laboratories.

(11) REPORT OF THE LIBRARIAN

(*W. S. Wallace, Esq., M.A.*)

I beg to submit the following report on the work of the University Library for the year ending June 30, 1934.

The number of volumes added to the Library during the year has been 12,016, and the number of pamphlets 6,862, making the total number of accessioned volumes in the Library 301,144, and the total number of pamphlets 114,153.

The following are the statistics of the use of the Library by undergraduates in comparison with previous years:

	1921-22	1926-27	~~1932-33~~	1933-34	1934-3
Reading-room books......	41,928	106,485	~~167,315~~	170,334	186,0
Over-night books.........	18,998	39,779	~~88,126~~	95,506	107,5
Week books..............	4,782	13,104	~~24,158~~	23,918	23,37
Totals..............	65,718	159,278	~~279,599~~	289,758	317,541

The circulation of books at the professors and graduates' register has been marked by a similar increase, and I append herewith a statement showing the total circulation in the Library during the recent years:

Total circulation	1926-27	1930-31	~~1932-33~~	1933-34	1934-3
To undergraduates	159,278	231,759	~~279,599~~	289,758	317,54
To professors and graduates	20,000	37,388	~~39,673~~	42,192	40,84
Totals	179,278	269,147	~~319,272~~	331,950	358,38

These figures are exclusive of books taken for consultation from the reference shelves, of which 21,999 have been replaced on the shelves by the library assistants during the year, but are inclusive of interlibrary loans, which have shown during the past year a considerable increase. In 1933-34, 752 interlibrary loans were handled, as against 689 the year before.

It might have been expected, with the decreased attendance at the University during the past year, that the circulation of the University Library would have fallen off; but instead of this the circulation has shown an increase of 12,678, or four per cent. over last year's total. This result is an interesting index of the increasing service which the Library is rendering to the University. It is due in part, no doubt, to the success of the University College reading-room as well as to the medical reading-room and the political science reading-room. These reading-rooms have not only served to take the strain off the main delivery desk in the Library, but they have without doubt increased the total circulation of the Library, through the additional facilities they have offered. A statement of the circulation in these reading-rooms follows:

Medical reading-room:	
reading-room books	10,841
over-night books	11,521
week books	3,575
	25,937
Political Science reading-room:	
reading-room books	11,827
over-night books	6,448
	18,275
University College reading-room:	
reading-room books	26,481
over-night books	14,272
	40,753

The increasing volume of circulation has created a serious problem in the wear and tear suffered by books in constant use. Apart from the large number of books sent to the University Press for re-binding, the assistants in the binding department in the Library have mended during the year 2,257 volumes. These are volumes which require merely a sort of "first-aid" in mending, and are as a rule books which cannot be withdrawn from circulation for the length of time required for binding.

The congestion in the Library, whether of books in the stack-room, or of readers in the reading-rooms, or of workers in the work-rooms, continues to grow more acute. With a view to releasing some space in the stack, and at the same time providing the law students with special facilities, it is hoped to open next year a law reading-room similar to the medical reading-room established several years ago, and to this all books and periodicals in law will be transferred. This will provide in the stack-room space for perhaps half of next year's accessions; but the time is rapidly approaching when it will be necessary to withdraw from circulation books now on our shelves in order to provide space for new accessions.

During the year the University Library has benefited by two generous bequests. The late Mr. Irving H. Cameron, for many years the professor of surgery in the University, bequeathed to the Library all his medical books, pamphlets, and periodicals; and the late Mr. Justice Armour, a member of the Board of Governors, left to the Library his law books. This last bequest is in addition to a considerable number of books which Mr. Justice Armour presented to the Library during his life-time.

In conclusion, I should like to bring to your attention the faithful and effective service rendered to the University by my assistants on the staff of the Library, under an ever-increasing pressure of work, and under working conditions which have become more and more difficult.

(12) REPORT ON RESEARCH

Anatomy, under direction of Professor J. C. Boileau Grant

During the last three years the head of the department has supervised closely and has devoted much time to the development of an anatomical museum for teaching purposes. In this he has had the able assistance of Dr. B. L. Guyatt, Mr. E. M. Davidson and others, with the result that it has now attained presentable proportions. Each of the several new dissections and specimens, which continue to be added week by week, is attractively illustrated and carefully described. There can be no doubt that a museum carefully planned to attract the student is a valuable adjunct to teaching and an acquisition to a department.

Dr. Grant has completed one stage of an investigation in which he has been engaged for a number of years—on the frequency, sites of occurrence and age incidence of duodenal diverticula. It appears that these outpouchings make their appearance for the most part during the sixth decade of life, when a high percentage of persons acquire them. He has completed his report for the National Museum on the anthropological data he collected on the pure Cree Indians and Cree—White breeds.

Dr. J. C. Watt, assisted by Dr. A. N. McKillop, has carried out an extended investigation of the arteries found in the posterior cranial fossa. A large series of observations has been recorded and more are continually being added. A preliminary paper, embodying the various relations of these arteries to the cranial nerve roots and the practical applications of these to intracranial surgery, has been accepted for publication in the Archives of Surgery and will appear shortly.

A longer, more extensive anatomical review of these findings is in process of preparation.

Dr. H. A. Cates has now brought to completion a study of the physical dimensions of a group of 700 babies 12 days old. This has been made possible by the co-operation of the department of obstetrics. The study furnishes some interesting information with regard to the question of maturity and variability in the newborn infant. The work has been accepted for publication and is appearing shortly.

In collaboration with Dr. George, he is attempting to determine with some accuracy the position of the scapula in the normal adult male. This has necessitated the devising of an apparatus to control and measure the subject. Such an apparatus has been constructed and has been tested with thirty subjects. It is hoped to complete this work next session. Dr. Cates has also promised to contribute to the Journal of Occupational Therapy a series of six articles on the subject of muscle action. Of these, two have already appeared.

Dr. A. W. Ham and Mr. H. D. Lewis studied the effects of disturbances of calcium metabolism on tissues. They found that continued administration to young rats of excessive doses of vitamin D results in not only the development of rachitic lesions in the bones, but also in a combined intimal and medial sclerosis in the coronary arteries, the intimal lesion being proliferative in character. Earlier work had shown that the immediate effect of one single massive dose of vitamin D was to produce a medial calcification in arteries. It now appears that the animals, if allowed to live, slowly develop intimal lesions in the coronary arteries of the heart and in the arteries and arterioles of the kidney. They explain these intimal sclerosis as sequelae to a single metabolic disturbance in which a shower of calcium precipitate settles in the arterial wall. Although they have produced calcification of the myocardium and in the kidney by feeding rats and mice high calcium, high phosphorus and high acid diets, they have been unable to show that the arterial lesions associated with hypervitaminosis D can be duplicated by this means. In connection with this work the parathyroid glands are being studied to see if there is any proof that vitamin D exerts a direct effect on this structure.

Mr. H. C. Elliott, as Richardson fellow, has investigated certain problems connected with the growth and replacement of articular cartilage. In young growing animals he was able to demonstrate that cell division occurs in a particular zone of the cartilage. His results thus confirm those of Harris. His next problem was to determine the mechanism by which cell replacement necessary to compensate for wear and tear is accomplished in articular cartilage. The lack of knowledge on this important and fundamental subject is itself evidence of the difficulties to be encountered in its solution. The refinements in technique which he has developed during this work have advanced the problem materially and the encouraging results already obtained give promise that the solution to this aspect of the problem may be expected in due time.

Dr. Ruggles George has completed an investigation of the topography of the unpaired visceral branches of the abdominal aorta based on a study of 120 cadavera, and a report is in preparation.

In collaboration with Dr. Cates Dr. George continued to collect information on the exact sites at which the erosion of the cartilage of the joints of the lower limb commonly takes place.

Dr. B. L. Guyatt and Mr. H. LeMasurier have demonstrated that when appropriate doses of parathyroid extract (Lilly) are administered to rats receiving a rachitogenic diet, the onset of rickets may almost be prevented. They have also collaborated in investigating a new and hitherto unknown bone condition, that occurs under the following circumstances: The bones and joints of chickens receiving a very carefully controlled ration, become very abnormal macroscopically and microscopically when the casein portion of that ration is washed with 25% solution of glacial acetic.

Mr. LeMasurier has started a series of experiments to explain the reactions obtained by staining calcium salts with various reagents.

As in previous years, the members of the staff have continued to collect data on the variations in structure and relationship of certain anatomical structures, selected either on account of their practical importance or for academic reasons. The extensive series of records already accumulated provides us with much valuable information.

Astronomy, under direction of Professor C. A. Chant

The greater part of Professor Young's time has been devoted to the installation of the equipment of the David Dunlap Observatory. A paper describing the 74-inch telescope was presented to the Engineering Institute of Canada at its annual meeting in Montreal and appears in the journal of that society for February 1934.

Under Dr. Young's direction Mr. K. O. Wright carried on an investigation on a suitable form of slit for a spectral photometer, and for it he was awarded the M.A. degree.

Under Dr. P. M. Millman photographic and visual observations of the

Leonid and Geminid meteor showers were made at the David Dunlap Observatory, and by special request he took charge of the photographic programme of observation of the Leonids at the Harvard Observatory. Commencing in April meteoric observations were made simultaneously at Brampton and Toronto in co-operation with the Byrd Antarctic expedition. The general investigation of meteor spectra was continued; and a new department, designed to interest amateurs in meteor observation, was begun in the Journal of the Royal Astronomical Society of Canada.

Biochemistry, under direction of Professor H. Wasteneys

Directed by Professor Wasteneys:

Mr. B. F. Crocker has commenced and is now pursuing a study of digestion *in vivo* by a method which enables the total contents of the digestive tract to be removed at various situations along its length through fistulae. In collaboration with Dr. J. Markowitz an operative technique has been developed which enables this to be accomplished.

Miss F. J. Hargreaves in collaboration with Dr. A. A. Fletcher and the late Dr. W. H. Dickson has completed a study of colon conditions in rats on vitamin deficient diets. They have been successful in obtaining very accurate measurements of the colon volume under varying conditions, which confirm observations made by means of X-rays. The results of this research have been embodied in a thesis which was submitted by Miss Hargreaves for the degree of M.A. and which will shortly be published.

Mr. H. W. Lemon completed his investigations on the enzymic hydrolysis and synthesis of ethereal sulphates. The results were embodied in a thesis for which the degree of M.A. was granted in October 1933. He was continuing with other aspects of this problem when he resigned to take up an appointment at the Ontario Research Foundation in January.

Mr. G. H. McVicar has completed his study of the enzymic synthesis of phosphoric esters, and of methods of obtaining highly purified phosphatase preparations. He has embodied the results of this research in a thesis which was submitted for the degree of Ph.D. and which will shortly be published.

Miss M. J. Lawson, who has been aided by a grant from the Banting Research Foundation, has continued her researches into the carbohydrate metabolism of kidney tissue.

Mr. V. Ignatieff has continued his investigation of the utilisation of organic phosphorus during different stages of development in plants.

Dr. R. D. Heard who was the recipient of a grant from the Banting Research Foundation has continued work commenced in England under Professor H. S. Raper. A substance related to a possible precursor of adrenaline—*d.l. β-3.4 dihydroxyphenyl N. dimethyl alanine*, has been synthesised in order to study the mechanism of its oxidation by the aerobic oxidases. The substance constituting the redox system which is responsible for the stabilisation of adrenaline within the adrenal gland has been identified as ascorbic acid (vitamin C). A substance or system which in turn stabilises ascorbic acid has been found in the adrenal gland as well as in the liver and other tissues. An investigation of this substance is in progress. Mr. A. D. M. Welch of the department of pharmacology has collaborated with Dr. Heard in some of these researches.

Directed by Professor G. F. Marrian:

Large amounts of oestriol have been prepared from human pregnancy urine. Clinical trials of this material have been commenced by Dr. M. Watson. Small amounts of a new non-oestrogenic sterol-like compound have been isolated from human urine. An investigation into its chemical nature has been commenced.

Work on the structure of the saturated triol ($C_{21}H_{36}O_3$) previously isolated from mare's urine has been continued. Large quantities of equol have been isolated from mare's urine, with a view to continuing work on its structure.

Mr. S. L. Cohen has modified the Kober colour test for oestrin, thereby rendering it strictly quantitative. A method has been evolved whereby it is possible to separate quantitatively the oestrine and oestriol in human pregnancy-urine and to estimate the amounts of each by means of this colour test. Making use of this colour test, an investigation of the rates of hydrolysis of the ether-insoluble oestrin esters in pregnancy urine at different H ion concentrations and by enzymes, has been commenced. In this way it is hoped to identify these esters.

Mr. D. Beall has worked out a new and rapid method for isolating oestrone from the urine of pregnant mares. He has shown that the oestrone can be quantitatively precipitated from the alkaline solution of a partially purified preparation as a mercury complex (by value of its ketonic group), which can be subsequently decomposed by acid. Evidence has been obtained that mare's urine contains a non-ketonic substance which gives the Kober test for oestrin and which is not oestriol. Its nature is being investigated.

Directed by Professor A. M. Wynne:

L. Farber has continued the investigation of the properties and mode of action of the pancreatic proteinase. The results have been embodied in a thesis for the degree of Ph.D.

R. C. P. French has made a study of the lipase activity of cereal grains and has investigated in some detail the properties and mode of action of the purified lipase of wheat.

L. B. Jaques has made a preliminary study of disaccharases of yeast and other cells with a view to further investigation of the specificity of these enzymes.

L. B. Pett has extended his previous studies of bacterial phosphatases to those other bacterial species. He has also investigated certain cultural and other factors which influence the development and activity of yeast phosphatase. The results of these and former studies have been embodied in a thesis for the degree of Ph.D.

S. Weinstein, who is the holder of a University Open Fellowship, has continued the investigation of the hydrolytic action of pancreatic lipase and has established certain optimum conditions for the synthetic activity of the enzyme. The results of his investigations have been embodied in a thesis for the degree of Ph.D.

A. M. Wynne, in collaboration with S. J. Neilson and B. I. Cooperman, has investigated (1) factors affecting the formation of ethyl and butyl alcohols by Cl. acetobutylicum, (2) the utilisation of glutamic, aspartic, succinic, fumaric and maleic acids by this organism.

Biology, under direction of Professor B. A. Bensley

The following summary includes investigations in progress, published or in course of publication, for the year 1933-34:

Vertebrate Zoology

Under the direction of Professor B. A. Bensley:

C. R. Gadaire—Studies on the relation of the enamel organ to the crown pattern in mammalian teeth.

C. K. Gunn—Origin and distribution of pigment in mammalian skin, resulting from natural and artificial causes.

Invertebrate Zoology

Entomology

By Professor E. M. Walker—Thoracic exoskeleton and musculature of *Grylloblatta;* female dimorphism of intersex type in a dragonfly; nymphs of Canadian Odonata, including a revision of the species of *Ophiogomphus;* Odonata of the maritime provinces and Quebec.

By Professor Norma Ford—Behaviour of the parasitic Sarcophagid fly *Wohlfahrtia vigil.*

Under the direction of Professor E. M. Walker:

C. E. Atwood—Effect of cold in stimulating the emergence from the pupa, hatching of eggs, and length of adult life at various temperatures of some lepidopterous insects of economic importance.

Miss A. Chorolsky—Growth stages of the primitive orthopteran insect *Grylloblatta* and factors influencing the hatching of the eggs.

Miss J. Fraser—Preliminary work leading to a histological study of the sense organs of caddis-flies.

F. P. Ide—Temperature factors in the distribution of mayflies of trout streams; life histories of mayflies of trout streams.

L. F. McGee—Life histories and oecology of midges of Ontario waters.

Parasitology

Under the direction of Professor E. M. Walker:

A. M. Fallis—Life histories and morphological studies of various Trematoda.

Miss E. M. Lyons—Taxonomic study of the cestode genera *Ligula* and *Schistocephalus.*

Mrs. E. Kuitunen-Ekbaum—Life history and taxonomic studies of cestode, nematode and acanthocephalan parasites of fishes, particularly the starry flounder and the haddock.

Histology

Under the direction of Professor W. H. Piersol:

Miss M. A. Langstroth—Studies on the histogenesis of fish muscle.

Marine Biology

By Professor A. G. Huntsman—Fatness in herring and factors determining it; sea life of salmon.

Under the direction of Professor A. G. Huntsman:

A. A. Blair—Factors determining scale formation in salmon.
W. H. Johnson—Food of Fundy herring.
R. A. McKenzie—Movements of Nova Scotia cod.
M. W. Smith—Fertilisation of water.
A. L. Tester—Fluctuations in abundance of British Columbia herring.

The following members of the Atlantic Biological Station were given accommodation in the laboratory for work in marine biology as indicated:

Dr. A. W. H. Needler—Oyster investigations.
V. D. Vladykov—Racial studies on haddock.

Animal Oecology and Ichthyology

By Professor A. F. Coventry—Studies of the small mammal population of Timagami Forest, in particular the relation between habitat and composition of the population.

By Professor J. R. Dymond—Taxonomy and distribution of Canadian fishes; taxonomy and oecology of Lake Nipissing fishes.

Under the direction of Professor J. R. Dymond:

C. H. D. Clarke—Periodic fluctuations in the number of ruffed grouse (*Bonasa umbellus*), with special reference to Ontario.

F. E. J. Fry—Biometric studies of ciscoes (*Leucichthys*) in Lake Nipissing.

D. A. MacLulich—Periodic fluctuations in the numbers of American hare (*Lepus americanus*), with special reference to Ontario.

Genetics

By Professor J. W. MacArthur—Linkage studies with the tomato; new mutations produced by X-rays and by ageing of seeds, and regeneration from callus; genetics of polyploid tomatoes; species crosses in *Aquilegias;* heredity of down characters in fowls; sterilisation from the standpoint of genetics.

By Professor J. W. MacArthur in collaboration with F. Jerome—Physiology and biochemistry of hybrid vigour in fowls; relation of food consumption to growth rates in pure bred and hybrid fowls.

By Professor J. W. MacArthur in collaboration with L. Butler (O.A.C.)—Analysis of seed inheritance in tomato fruits.

By Professor J. W. MacArthur in collaboration with R. Cavers (O.A.C.)—Genetics in crosses of Houdans with other breeds of fowls.

Under the direction of Professor J. W. MacArthur:

Miss V. Engelbert—Cytogenetic studies of grasses of the genus *Poa.*

C. K. Gunn—Genetics of rodent hair characters.

G. Raithby—A study of the pedigrees of qualified R.O.P. Holstein bulls.

J. B. Smith—Genetics of malposition in fowl embryos.

E. S. Snyder—Genetic factors controlling hatchability of eggs.

Vertebrate Anatomy

By Professor W. H. T. Baillie—Muscle relation in mammalian jaws; effects of light and shade on pigmentation; blood distribution in the intestinal tract of mammals; histological investigation of an artificially implanted fish eye.

Comparative Neurology

By Professor E. H. Craigie—Multilaminar cortex in the dorsal pallium of the emu; hippocampal and parahippocampal cortex of the emu; preparation of reptile brains (blowing adder, water and garter snakes, turtles and lizard) for comparison with brains of ratite birds; morphology of mossy fibres of snake and fish cerebella.

By Professor E. H. Craigie in collaboration with Professor V. E. Henderson—Localisation of the respiratory centre in the cat's brain.

Under the direction of Professor E. H. Craigie:

C. G. Smith—Postnatal growth of cerebral cortex of albino rats; postnatal changes in the olfactory bulbs of the albino rat.

Miss H. M. Stevens—Quantitative study of the vascularity of the hypophysis of the cat.

Limnology

Under the direction of Professor W. J. K. Harkness:

D. Chitty—Spawning of garpike (*Lepisosteus*) and bowfin (*Amia*).

J. M. B. Corkill—Factors controlling exygenation of natural waters.

R. R. Langford—Studies of the plankton of Ontario waters.

J. P. Oughton—Bottom fauna of lakes and streams; distribution of aquatic and terrestrial Mollusca in Ontario.

E. S. Pentland—Oecological, cultural and taxonomic studies of the genus *Gammarus* as represented in North America.

W. E. Ricker—Food chains and factors limiting the production of sockeye salmon in Cultus Lake, B.C.

E. Skelton—Rate of growth of Lake Nipissing fishes as based on a study of the scales.

Mrs. E. G. Skelton—Food of Lake Nipissing fishes.

Taxonomy and Distribution

The following studies, chiefly on taxonomy and distribution, have been carried on during the past year by the staff of the Royal Ontario Museum of Zoology:

L. L. Snyder—The northern sharp-tailed grouse.
E. B. S. Logier—The American ribbed toad (*Ascaphus truei*) in British Columbia.
T. B. Kurata—The spiders of Ontario.
J. L. Baillie—Records of birds breeding in Ontario.
T. M. Shortt—Baird's sparrow.
E. G. McDougall—The present range of deer, moose and caribou in Ontario.

Botany, under direction of Professor R. B. Thomson

Phanerogamic Botany, Genetics and Plant Breeding

Anatomy and Experimental Morphology

Baldwin, W. K. W.—The organisation of the young sporophyte of *Ophioglossum* and *Botrychium*.
Bannan, M. W.—The origin and character of xylem rays in the gymnosperms.
Seasonal wounding and resin cyst production in the hemlock *Tsuga canadensis* (L.) Carr.
A comparison of the distribution and relationship of albuminous cells in phloem rays of the gymnosperms.
A comparative study of the development, distribution and character of the resin ducts in the wood of the conifers.
Fitzpatrick, R. E.—The ontogeny of the Peach Leaf.
Hull, Kathleen L. and Thomson, R. B.—The structure of the early stages of the sporophyte of *Lycopodium* and *Selaginella*.
Roscoe, Mary K.—Studies of vessels in the Birch.
Taylor, T. M. C.—The sporeling organisation and the cladorhize development of the adult plant in *Equisetum arvense* L.
Thomson, R. B.—Modification of the form of the embryo in *Marsilia* on development in culture fluid.
Modification of the form of the embryo in Cycads, Ginkgo and conifers on development in culture fluid.
Thomson, R. B. and Bannan, M. W.—The stimulation of resin production by chemical means.
Thomson, R. B. & Hull, Kathleen L.—The organisation of the lower vascular plants.
Wright, J. Gertrude—The nature of the pit-closing membrane in the higher gymnosperms.

Taxonomy

Krotkov, P.—Collection in Ontario; revision of the herbarium material; special study of Ontario willows and golden rods.
Taylor, T. M. C.—The moss flora of Ontario and the distribution of Ontario Pteridophyta.
A study of the genus *Betula*.

Genetics

Thomson, R. B. & J. Gertrude Wright—A study of abnormal types of *Linaria vulgaris* and their heredity.

Mycology, Forest Pathology and Cryptogamic Botany

(Under the direction of Professor H. S. Jackson)

Bier, J. E.—A study of Hypoxylon canker and other canker producing fungi attacking *Populus*.
Cain, R. F.—A taxonomic study of Ontario Sordariaceae and related Sphaeriales.
Dearness, John—With the co-operation of the Department of Botany, Dr. John Dearness of London, Ontario, is preparing an annotated list of the fungi known to occur in Ontario.

Groves, J. W.—Cultural studies of certain canker forming species of *Dermatea*, *Pezicula*, *Godronia* and related forms.

Jackson, H. S.—Study of the rusts of South America based on the Holway collections. This is a taxonomic study dealing with a large collection of rusts made by the late Professor E. W. D. Holway, of the University of Minnesota, in South America. Publication is in the form of a series of papers in Mycologia. Six numbers have already been printed, and a supplementary number is in preparation. (See Mycologia 18: 141-162; 19: 51-65, 1927; 23: 96-116, 332-364, 463-503, 1931; 24: 62-186, 1932).

A study of the rusts of Panama and Costa Rica.

The mycological flora of the Toronto region and of the Temagami Forest Reserve.

A cytological study of *Herpobasidium filicinum*.

The Ustilaginales of Venezuela.

Lehmann, A. J. V.—A study of the nuclear phenomena of the germination of the teliospores of certain species of *Lepto-Puccinia*.

Nobles, Miss M. K.—A cultural study of certain resupinate Hydnaceae and Thelephoraceae.

Thompson, Mrs. G.—A cytological study of *Erysiphe aggregata*.

Plant Ecology and Seed Studies

(Under the direction of Professor H. B. Sifton)

Structural Ecology:

Cormack, R. G. H.—A microchemical and experimental investigation of the development of root hairs.

McPherson, D. C.—On the structure, form, and development of *Sagittaria sagittifolia*.

Sifton, H. B.—On the development of the leaves of Labrador Tea.

Seed Studies:

Hamly, D. H.—Further investigations on the seed coats of Legumes.

Physiology of germination in Wheat.

Leggatt, C. W.—Investigation of dormancy in Wild Oats.

Investigation of certain mathematical aspects of seed analysis.

McGugan, Miss J. E.—The Seed-coats of the genus *Brassica*.

The occurrence of certain characteristic pigments in the cotyledons of *Brassica* species and varieties,—and their value in seed identification.

Sifton, H. B.—Investigation of the effect of alternating temperatures on seed germination.

Plant Physiology

(Under the direction of Professor G. H. Duff)

Duff, G. H.—Respiratory metabolism of the wheat leaf.

Experimental investigation of the coincidence in time of Stomatal activity and of subsidiary maxime in the respiration record indicates that the two phenomena are not related. This result appears to necessitate a metabolic hypothesis to account for the latter.

Krotkov, G.—Carbohydrate and respiratory metabolism in the isolated, starving wheat leaf.

Analysis of the experimental data is now complete and the results have been embodied in a thesis submitted for the Ph.D. degree.

Plant Pathology

(Under the direction of Professor D. L. Bailey)

Bailey, D. L.—Dead Arm Disease of Grape,—in co-operation with Vineland Experimental Station.

Diseases of Ornamentals.

Cytospora disease of Koster's Blue Spruce.

Suspected virus diseases of lilies and gladiolus.

These projects are being continued at the Vineland Experimental Station

Fitzpatrick, R. E.—A continuation of the studies as described in *Scientific Agriculture* 14: 305-328, 1934, on the life history and parasitism of *Taphrina deformans* (Peach Curl).

Hildebrand, A. A.—Ginseng Root Rot Project.

Langford, A. N.—Cladosporium Leaf Mold of Tomato. (In co-operation with Prof. J. W. MacArthur, Dept. of Biology, U. of T.) A study of the genetics and pathology of *Cladosporium fulvum*.

Putnam, D. F.—Virum Disease of the Potato. After preliminary study of some potato virus complexes, an attempt has been made to analyse the complex which occurs typically on the variety President when grown in Nova Scotia. Evidence to date indicates that two and perhaps three virus components are concerned.

Truscott, J. H. L.—Strawberry Root Rot Project. This project was continued through the support of the National Research Council. The results to date are summarised in a paper entitled "Fungous Root Rots of the Strawberry", which will appear in an early issue of the Canadian Journal of Research.

Parasitic Phycomycetous Fungi. The results to date formed a part of the Ph.D. thesis offered by Mr. Truscott for this degree in June. The project is being continued, emphasis being given at the moment to the fungous flora of weeds and of native plants.

Chemistry, under direction of Professor W. Lash Miller

Thirty-five students were engaged in research during the past winter under the direction of professors of the department of chemistry. The degree of Master of Arts was conferred on eleven of these viz:—Mrs. B. M. (Shannon) Falconbridge, and Messrs. H. Bernard, A. F. W. Chechack, H. L. Collins, D. L. Griffith, F. A. Lawford, B. A. Lloyd, J. R. Patton, R. G. Romans, J. J. Tansey, C. Unruh, and F. E. W. Wetmore; also on Mr. J. K. Watson who worked under Professor E. J. King in the Banting laboratories.

The degree of Doctor of Philosophy was conferred on Mr. A. M. Fisher, whose work on the chemistry of insulin was carried out in the Connaught laboratories under the direction of Dr. D. A. Scott.

The following were the subjects of research:—

F. E. Beamish, M.A.—Determination of halogens in organic compounds.

H. Bernard, M.Sc.—Action of sodium benzylate on dimethyl oxalate.

A. F. W. Chechack—Synthesis of quaternary ammonium bases.

H. L. Collins, B.A.—Microestimation of arsenic in organic compounds.

L. H. Cragg—The sour taste of acids.

Miss E. V. Eastcott, Ph.D.—Purification of Bios IIB.

Miss L. Elder, M.A.—Behaviour of certain moulds with the constituents of Bios.

Miss L. Farrell, Ph.D.—A fourth constituent of Bios.

A. R. Gordon, Ph.D.—Calculation of thermodynamic quantities from spectroscopic data.

D. L. Griffith, B.A.—Commercial estimation of the platinum metals in ores.

A. H. Heatley, M.S.—Voltage distribution in the carbon arc.

O. H. Howden, M.A.—Raman effect in electrolytes.
A. A. Janis—Vapour-pressure lowering of aqueous salt solutions.
K. Kay—Adsorption of aqueous vapour on plane quartz surfaces.
L. F. King—Reaction between esters and alcohols in presence of sodium alcoholates.
F. H. Lawford, B.A.—Specific heats of binary solutions.
B. A. Lloyd, B.S.—Liquid immiscibility in ternary systems.
H. W. Lohse, Ph.D.—Determination of potassium in soils.
F. R. Lorriman, Ph.D.—Ring closure in aromatic keto acids.
G. E. Moore, M.A.—Electrical conductivity if water adsorbed on powders.
W. G. Moore, B.Chem. Eng.—Action of benzyl chloride on aromatic compounds.
J. C. Morgan, M.A.—Oscillograph attachments.
A. C. Morris, M.A.—Vapour pressures of binary liquids.
Miss M. A. McQuhae, M.A.—Separation of intimately mixed powders.
J. R. Patton, B.Sc.—Calcium-sodium base exchange in doucil.
W. O. Reeveley, M.A.—Transport numbers of alkalis in acetate solutions.
R. G. Romans, B.A.—Trans-cis photochemical reaction of di-p-toluylethylene.
Miss C. J. Sanderson—Methods of preparation of the constituents of Bios.
Miss M. C. Scott—Separation and determination of iron and arsenic.
H. A. Showalter, M.A.—Solubility of gases in liquid solutions.
Miss H. Stantial, Ph.D.—Purification of Bios IIA.
M. L. Staples—Improvements in the synthesis of cycloparrafins.
J. J. Tansey, B.A.—The simultaneous diffusion of copper and sulphuric acid.
C. Unruh, M.A., B.Sc.—Reactions of alcoholic chlorides with certain aromatic compounds.
W. F. Weston—Adsorption of glucose by cupric hydroxide.
F. E. W. Wetmore, B.Sc.—Thermodynamic potential of copper sulphate in aqueous sulphuric acid solutions.
E. E. Wood, M.A.—Stability of ferrous oxide.
H. E. Woodward, Ph.D.—Microchemical spot tests.
J. V. Young, M.A.—Alkaline reduction of meso nitor-anthracene.

Food Chemistry, under direction of Professor C. C. Benson

Of the six students registered this session in this department from the School of Graduate Studies, three have been taking preliminary undergraduate work and the remaining three have been investigating problems in connection with the physical and colloidal chemistry of foods. Investigations are in progress in connection with studies of emulsions, of foams and of fruit acids.

Miss E. J. Reed has completed a part of the work on foams, with special reference to the nature of beaten egg white mixtures and has been granted the degree of Master of Arts.

Geology, under direction of Professor W. A. Parks

Professor A. P. Coleman (professor emeritus) was engaged during the year as follows:

Continuing work on the east end of Lake Iroquois and mapping the marine beaches in Prince Edward county.

Studying the glaciation of the Andes of Colombia, South America.

Professor W. A. Parks
Study of the zoological affinities of the *Stromatoporoidea.*
Examination of Devonian stromatoporoids.

Under direction of Professor W. A. Parks
J. F. Caley—Completion of the study of the Upper Ordovician of Manitoulin island.

H. G. Way—Completion of the study of the Silurian of Manitoulin island.
J. P. Nowlan—Study of the Silurian formations of the Niagara cuesta.
E. W. Shaw—Study of the Guelph formation of Ontario.

Professor W. S. Moore completed the study of the genetic relations of Keweenawan diabases and silver deposits in Ontario and has been engaged in a study of the relations of certain igneous rocks in the Canadian shield.

Under direction of Professor E. S. Moore
W. S. Savage—An investigation of the conditions under which manganese deposits are formed.
S. Duffell—Experimental study of diffusion in rocks and its influence on the formation of ore deposits.
M. F. Teskey—The origin of coking coals.
A. W. Derby—The nature and relations of Algoman porphyries in Ontario gold fields.
G. S. MacKenzie—The origin of some post-Cambrian mineral deposits in the St. Lawrence basin.

Professor A. MacLean collaborated with Professor Coleman on the Glacial geology of Ontario.

Dr. M. A. Fritz
Study of new species of Bryozoa from the Silurian of Lake Temiskaming.
Work on the illustrated catalogue of Devonian type Bryozoa.

Dr. D. R. Derry
Preliminary work on the lamprophyre dikes of Ontario.
Further work on the Pleistocene sediments of the Toronto district.
Growth of authigenic feldspar crystals in Palaeozoic sediments.

Under the direction of Dr. D. R. Derry
A. Holstein—The examination of Silurian and Ordovician strata from the point of view of sedimentation.

Mr. J. C. Sproule
Field work and laboratory studies on the Middle Ordovician strata of Ontario.

Household Science, under direction of Professor A. L. Laird

During the past year there have been seven students in this department working for the degree of Master of Arts under the joint direction of Professors Laird and Willard.

Miss D. B. Fleming continued her work started last session on baking tests with ovenware of different materials.

Miss H. M. Newton's problem was the investigation of the cause of dark specks in baking powder products, and how they may be avoided.

The other five students have been studying how various factors affect the losses of total solids, reducing substances, and mineral constituents, when vegetables are cooked in water. Miss L. P. Lockhart investigated the losses with turnips and celery, Miss M. R. McKellor studied white turnips and string beans, Miss M. L. Nimmo used sweet and white potatoes, Miss M. E. Robertson employed cauliflower and parsnips, and Miss B. C. Williamson worked with cabbage.

Applied Mathematics, under direction of Professor J. L. Synge

The following researches have been in progress during 1933-34:
B. A. Griffith, M.A.:—Higher approximations to the steady flow of a viscous liquid past a fixed circular cylinder.
A. F. Stevenson, Ph.D.:—Continuation of previous work on the theory of current flow in a heterogeneous medium, with reference to geophysical prospecting.

J. L. Synge, Sc.D.:—The disturbance of the steady flow of inviscid and viscous liquids.

Mechanical models of Riemannian spaces.

A mechanical theory of the energy tensor of a continuous medium in the theory of relativity.

Medical Research, under direction of Professor F. G. Banting

Dr. F. G. Banting and Miss S. Gairns have carried out experiments in the endeavor to produce resistance to Rous sarcoma.

Dr. G. H. Ettinger has investigated, with the assistance of Mr. J. A. Romeyn and Mr. F. L. Harrison, the effects of low voltage electrical currents upon the heart of the cat, and of electrical shock upon the tension of carbon dioxide in the expired air of the same species.

Mr. G. E. Hall has been investigating a possible relationship between peptic ulcer and the chemical products of autonomic nerve stimulation.

Dr. Ettinger and Mr. Hall have been collaborating on the following problems:

The effect of long continued administration of acetylcholine upon the circulatory system of the dog.

An estimation of the acetylcholine content of the blood of the ox and dog.

An estimation of the esterase content of the blood of domestic animals and of man under conditions of health and disease.

Dr. D. A. Irwin applied micro-incineration methods to the study of siliceous fibrosis and by the addition of acid extraction to this method, was able to make a differential diagnosis between a tuberculous and silicotic nodule.

Dr. Irwin and Dr. King tested Dr. W. D. Robson's hypothesis concerning the effect of gas on the production of silicosis, and it was found that dilute irritating gases mixed with quartz dust gave rise to an early fibrosis. The same gases with sericite dust did not produce fibrosis.

Dr. Fallon and Dr. Carrow studied the effect of certain fractions of pregnant urine on the growth of tumors and found that it had no effect.

Dr. Fallon is investigating the early changes produced in subcutaneous tissues by the injection of silica particles.

Mr. H. J. Perkin, Dr. B. R. Brown and Miss J. Lang have developed an iodine tolerance test which indicates that the curve of blood iodine following a single dose of Lugol's solution is lower in hyperthyroid patients than in normal persons.

Dr. M. Mitchell studied the effect of finely divided carbon on the toxicity of diphtheria toxin. With Dr. LeMesurier, of the Surgical Staff of the Hospital for Sick Children, he conducted experiments on ischemic paralysis.

The work on the machine to remove dust from mine air has been continued by Dr. W. R. Franks. A unit assembled under the auspices of the Ontario Mining Association has been tried out in the mines. This dust precipitator was found to reduce dust formed by a blast in a mine drift from 15,000 particles per cc. to 200 within half an hour. Thus the principle of electrical precipitation has been established. However, many difficulties have arisen in connection with the practical application—the present design of the machine is unsatisfactory. Further experimentation must be done both on the design of the machine and on the study of the fumes from the exhaust.

With the assistance of Miss L. C. Tresidder and the co-operation of the Porcupine group, Dr. Franks has developed a new photometric method of estimating dust. Among other advantages this does away with the tedium of counting. The method should materially aid in co-operating dust exposure with clinical findings. During the year instruction in the method has been given to interested members of the graduating class in mining engineering, also to a graduate student at Queen's University.

With the assistance of Miss A. J. Watt, the in-vitro study of the development of silicosis has been undertaken by the method of tissue culture. Phagocytosis of siliceous dust by monocytes has been studied to date.

Mr. L. D. Proctor and Dr. Franks have investigated the mechanism of the action of lactate on fermentation in tumor. Toxic methylglyoxal has been isolated in vitro from the products of hexosephosphate fermentation in presence of lactate.

Dr. Franks and Miss M. M. Shaw studied the effect of inhibition of fermentation in tumor by lactate and iodoacetic acid after radiation. About 20 per cent. regressions resulted in the iodoacetic acid group.

Miss E. L. Batho and Dr. Franks are studying the possible synthesis of a specimen antigen from tumor. The effect of synthetic analine and naphthaline antigen complexes on tumor transplantability has been studied.

Dr. E. J. King and Miss M. E. Dolan have continued the investigation on the metabolism of silica, and have demonstrated the soluble silica is absorbed from the lung into the blood and excreted in the urine. The effect of diet on the excretion of silica has been studied.

In collaboration with Dr. T. H. Belt, of the department of pathology, Dr. King, Miss Dolan and Dr. D. A. Irwin have made a study of the distribution of silica in a wide variety of human tissues.

Mr. E. L. Outhouse has made a study of the chemistry of phosphoric esters occurring in malignant tissue. An alcohol insoluble barium salt has been isolated which contains amino nitrogen as well as phosphate; it is non-reducing and does not give a Molisch reaction.

Miss H. Tait has made a study of the oxygen uptake of various fatty substances with glutathione in the Barcroft apparatus. Lecithin takes up more oxygen than free fatty acids or glycerides. The unsaturated fatty acids from lecithin are not oxidised as rapidly as the parent phosphatide.

Mr. J. K. Watson has investigated the possibility of estimating small quantities of silica by precipitating with organic bases the complex acid which silica forms with molybdate.

Mr. A. C. Medcalf, of the chemistry department, has worked part time in this laboratory during the year. He has studied the enzymic hydrolysis of the phosphatides—lecithin, kephalin, brom-lecithin and brom-kephalin—by lipase and by phosphatase.

Dr. A. R. Armstrong and Dr. King have elaborated a procedure for the clinical estimation of phosphatase, using phenyl phosphate as the substrate, which is more simple than previously described methods and more quickly carried out.

Dr. A. R. Armstrong and Dr. King, with Dr. R. I. Harris of the department of surgery, investigated the serum phosphatase in cases of obstructive jaundice. They also followed the serum phosphatase of obstructive jaundice produced experimentally.

Dr. Botterell of the department of surgery and Dr. King studied phosphatase in fracture cases from the wards of the Toronto General Hospital, and in experimentally induced fractures.

Dr. T. G. H. Drake and Dr. J. R. Ross of the Hospital for Sick Children, have collected a large number of blood samples from infants and children for phosphatase estimations in this laboratory. In this study a micro-method, which was worked out by Dr. Armstrong and Miss Tait, has been used to determine the phosphatase activity on the very small amounts of blood obtainable from these cases.

Professor C. C. Lucas of Brandon College, spent the summer of 1933 in this department, as holder of the Dr. James Page Rutherford Scholarship. He continued his work on the chemistry of the cysteinelike substance which he isolated from urine; and collaborated with Dr. J. R. Ross of the Hospital for Sick Children, in the elaboration of a new and delicate method for the determination of minute amounts of lead in biological material.

Medicine, under direction of Professor Duncan Graham

Dr. Farquharson is about to publish a valuable contribution to our knowledge on the effect of the continued administration of large amounts of irradiated ergosterol to patients suffering from post-operative parathyroid tetany.

Dr. Farquharson, with Dr. Mills of Montreal and Dr. McHenry of the Connaught Laboratories, has reported upon the use of intramuscular liver extract in the treatment of pernicious anaemia. The extract used for these investigations was made in the Connaught Laboratories of the University.

Dr. Hyland, in association with Dr. Farquharson, has made a most careful neurological examination on patients suffering from pernicious anaemia, both before and during treatment. At the present time over one hundred and fifty cases are under careful observation. The beneficial effect of adequate liver therapy on the neurological manifestations present in pernicious anaemia observed and reported on some years ago has been amply confirmed in this more recent observation.

Dr. Hyland has published an important report correlating the clinical significance with the pathological findings in cases of thrombosis of the different intercranial arteries.

Dr. Warner has made another important contribution to the investigation of bronchiectasis.

Dr. Rykert, who is the holder again this year of the Alexander McPhedran Fellowship in Clinical Medicine, has made some interesting and important observations on the electrocardiographic changes developing in certain patients with hypertension.

In the course of his investigations on the arginase content of the blood in cancer, Dr. Dauphinee has found that it is not increased. This is contrary to the findings of Haddow. He has made the interesting observation that an increase in the arginase content of the blood is present in patients suffering from pernicious anaemia and that this increase disappears under adequate liver therapy. The possible significance of this interesting finding is being investigated.

Dr. Cleghorn has been interested in the preparation and assay of cortical extract from the suprarenals. He has been studying the effects of administration in mice. The Connaught Laboratories have very kindly offered facilities for the preparation of the extract and the advice and assistance of their staff in this work. Through the generosity and kindness of J. S. McLean, Esq., supplies of suprarenals have been provided.

In the field of dermatology, Dr. Wrong has published two interesting reports on psoriasis.

Satisfactory progress is being made in the investigation of other problems, some of which have been referred to in earlier reports.

Mineralogy, under direction of Professor T. L. Walker

Work connected with the Royal Ontario Museum has made serious demands on the time of the senior members of the staff, so that the time available for research has been somewhat limited.

The following investigations have been carried to completion:

Mr. W. L. Brown has continued his study of the photo-phosphorescence of minerals, and for calcite has shown that the intensity of fluorescence is connected with the percentage of manganese present.

Mr. V. B. Meen has developed a technique for polishing, etching and examining minerals with the purpose of distinguishing alpha and beta quartz.

Professor A. L. Parsons has been engaged in a study of the possibilities presented by Canadian minerals for use as semi-precious or ornamental stones. He has also made a short study of an unusual type of Calcite crystal from Godfrey, Ontario.

Professor Ellis Thomson has continued his studies on the silver-uraninite deposits of Great Bear Lake, N.W.T., and on the telluride ores at Straw Lake, Ontario, and Eureka Mine, Quebec.

Professor T. L. Walker has made a detailed study of chemawinite or Canadian amber from Cedar Lake, Manitoba, in which he has found several insects and a distinct crystallised mineral to which he has given the name Enelectrite.

Several partially completed studies are under way and it is hoped that they will be completed in the coming academic year.

Obstetrics and Gynaecology, under direction of Professor W. B. Hendry

Investigations are being made by Dr. D. N. Henderson concerning the clinical value of endocrine therapy in connection with disturbances of menstruation, the results of which will be published later.

Dr. John Mann has brought to perfection an obstetric forceps involving the principle of a movable joint, which will be of great value in the practice of obstetrics.

Dr. W. G. Cosbie is continuing his investigations into the value of thorotrast as a diagnostic aid in obstetrics.

Drs. H. B. VanWyck and Mann are continuing their work in connection with the toxaemias of pregnancy.

Dr. J. C. Goodwin is pursuing his study of racial characteristics in their relation to labour.

In co-operation with the departments of urology and radiology, a study of the ureteral changes occurring throughout pregnancy is being made, the results of which will be published later.

Paediatrics, under direction of Professor Alan Brown

The policy of close co-operation with other departments of the University is now bearing fruit. As a result of our co-operative work with the Connaught Laboratories the lives of two children have been saved through the institution of more intensive treatment of tetanus with antitetanic serum. Also, most interesting and practical work is being done on the development of effective whooping cough vaccine.

The continued use of the oxygen tent, which was first used in this department through the co-operation of the department of physiology, and the use of the Drinker Apparatus, has resulted in the saving of many lives.

Working in conjunction with the department of pharmacology, interesting and informative studies on the treatment of anaemias in children have been undertaken.

With the assistance of members of the dental profession we have shown that additional amounts of vitamin D have markedly reduced the incidence of tooth decay in children living under what have been formerly considered excellent hygienic and dietetic conditions.

In a joint effort with the department of psychology it has been shown that dietary defects in animals during early life can interfere with their learning ability. The possible application of this to human conditions is obvious.

Through our association with the Banting and Best department of medical research valuable studies have been instituted on the subject of lead poisoning. This condition is frequently encountered in children, and these new researches indicate that many cases which were previously undiagnosed are now found to be suffering from this condition. Therapeutic methods have been instituted which have lowered the mortality in this disease.

Nutritional studies are being continued, and information is being obtained which indicates that our diets, which we previously considered adequate, are still not optimal, and measures are being taken to correct these deficiencies.

In regard to this work, it is of interest to note that the advice of members of the laboratory staff has been sought on nutritional problems by the Ontario Medical Association, the National Dairy Council of Canada, the Agricultural College, the Pacific Fisheries Experimental Station, and also in connection with the dietary relief problems of Newfoundland.

Pathology, under direction of Professor O. Klotz

Dr. P. H. Greey, who is in charge of the diagnostic clinic in Bacteriology, is continuing his investigations of actinomycosis in man. He has also been studying the inhibitive effects of arsphenamine on haemolytic streptococci finding that this substance in high dilutions prevents the haemolytic action of these streptococci in media. Dr. R. Margarite Price is still carrying on her special studies on tubercle bacilli from human cases of tuberculosis. Dr. E. J. Clifford is continuing his investigations on the bacterial flora of the intestinal tract with particular reference to metabolic disturbances.

Numerous other studies have been completed by various members of the staff in pathology. Dr. G. H. Fetterman—A study of the vascular lesions in surgically excised stomachs; Dr. F. G. S. Christie—Healed syphilitic aortitis; Dr. R. J. M. Galloway—The appearance of the walls of muscular arteries distended at their normal blood pressures; Dr. F. O. MacCallum—Studies on haemolytic B. coli; Dr. J. R. E. Morgan—The relation of histamine to inflammation; Thrombo-angiitis obliterans, distribution of the lesion in the leg vessels; Dr. M. V. Rae—Fatal epizootic myocarditis in guinea pigs; Dr. K. A. Roberts—The action of haemolytic streptococci on human blood fibrin; Dr. T. H. Belt—Amoebic dysentery in Canada (report of a case); Pulmonary embolism; Thrombosis and pulmonary embolism.

Pathological Chemistry, under direction of Professor V. J. Harding

The greater part of the research work of the department has been concerned with the development and application of the biological system of sugar analysis devised by Harding and Nicholson. Professor T. F. Nicholson himself, besides taking part in some of the work bearing on the application, has studied a further number of yeasts and bacteria, hoping to find one capable of replacing *Proteus vulgaris* as a specific reagent for glucose. This latter has not failed in its specificity but is mechanically much more difficult to operate. The reagent for maltose (*Monilia tropicalis*) seems to have altered in its specificity during two years laboratory growth, and requires revision.

Progress has been made with the study of the sugar material of normal urine. Mr. R. M. Archibald and Mr. S. H. Jackson have been associated with this work. The technique in this research has been very difficult, and credit is due to both workers for some very painstaking work. The new finding has been the occurrence of galactose, both free and combined, in all urines. Large amounts of glucose can be set free by hydrolysis.

Xylose has sprung into prominence in the last two or three years as a possible reagent for the estimation of glomerular filtrate. Dr. D. L. Selby and Dr. A. K. Moffat have made an extensive study of its action on the normal kidney. The new methods of sugar analysis allow of its easy estimation under clinical conditions.

Dr. R. J. Manning, professor of biochemistry, University of Saskatchewan, has been spending a sabbatical year with us. He has been studying intermediate hydrolysis products of glycogen and starch, by the new analytical methods.

Dr. R. W. I. Urquhart and Dr. J. L. McCollum (fellow in genito-urinary surgery) have been collaborating in an extensive study of kidney function tests in this field of surgery. The results have been of practical value and will be published shortly.

Pharmacology, under direction of Professor V. E. Henderson

The following pieces of research have been in progress during the year. Dr. Roepke and myself have studied the reactions of the parasympathetic nervous system to drugs and nerve stimulation, and as a result papers on the following subjects have been published during the year or are in press—On the Salivary Secretion and Blood Flow, The Mechanism of Erection, and The Mechanisms of the Urinary Bladder. The last paper strongly suggests that there is a local hormone other than acetylcholine which mediates the transferal of certain parasympathetic nervous impulses. Evidence has also been obtained which points to acetylcholine being the mediating substance between pre- and post-ganglionic parasympathetic nervous impulses. These papers, with others by other research workers, require a recasting of a great part of our previous pharmacological teaching.

Professor Lucas has carried further his study of the ciliary activity begun last year and published this year, and has studied particularly the stickiness of the mucus secreted by bronchi and the salivary glands. The study has been a tedious one but is yielding results which have definite practical application in anaesthesia and in the treatment of cough. In conjunction with myself a series of notes on the Canadian Formulary and British Pharmacopoeia have been published in the Canadian Medical Journal.

Dr. Roepke has undertaken a study of the oxidation reduction potentials of certain of the less common sugars. This work is of fundamental importance, though its immediate application is not clear. He has also been engaged in another study of acetylcholine mechanisms which appears very interesting.

Mr. Welsh has completed a study of the mode in which adrenaline is protected from prompt destruction by oxidation in the body. His findings are not only of fundamental importance but explain one of the mysteries which have long been bothering thinking pharmacologists. As a direct result he and Dr. Heard, working under the Banting Research Foundation in biochemistry, have been able to explain certain observations previously made in regard to the production of adrenaline, and this work when completed will also prove to be of a basic importance. Mr. Welch has also made a study of certain rare alkaloids isolated at the National Research Laboratories in Ottawa, which prove to form an interesting pharmacological group.

Physics, under direction of Professor E. F. Burton

During the Session 1933-34, there were seventy-two graduate students in attendance in the department of physics. Of these thirty-five were engaged in experimental research work, and the remainder were taking various courses of lectures. Twenty-nine students were enrolled in various courses in physics as part of their work for the Ph.D. degree, and thirty-one in courses leading to the M.A. and M.Sc. degrees. One student was enrolled in the course for diploma in radiology. In physics three students were granted the degree of Doctor of Philosophy, four the degree of M.A., and three the degree of M.A. (Meteorology).

Special lectures were given by Dr. J. C. McLennan, F.R.S., professor emeritus, during the month of March.

The department wishes to record gifts of apparatus as follows: Two natural quartz plates 7 cm. diameter, 1 cm. thick, with angle of 35′ unsilvered, from Professor McLennan.

A large concave mirror, diameter 36 inches, focal length 16½ in., the gift of the British Admiralty through the kind offices of Professor McLennan. Both of these pieces of apparatus are very costly.

There has been instituted during the year, in a special room in the basement of the Physics Building, a new 21-foot concave grating, prepared by Professor H. G. Gale of the University of Chicago. This has been erected with an Eagle mounting, and gives very excellent spectra, even in the fifth orders.

During this year also, there was completed, in a room in the basement of the Physics Building, an emanation plant for the production of radon seeds. This plant was paid for by the Department of Health of the Ontario Government, and is being operated for them under the direction of the director of the physical laboratory.

The cryogenic laboratory, in which is produced liquid air, liquid hydrogen, and liquid helium, has been running very efficiently during the whole year. Liquid helium, in ample quantities, has been produced on 43 separate occasions without a hitch of any kind. This has meant a great deal to the progress of the research work in superconductivity.

As has been our custom, the department of physics has cooperated in minor ways with various other scientific departments in the University, and with the Ontario Research Foundation, in the use of apparatus belonging to the department.

In organising the research work in physics, members of the staff and the research workers are divided into groups depending on the phase of work in which they are interested. Individual members of these several groups cooperate fully in planning and carrying out the researches in which they, as a group, are interested. These groups meet in conference with the director from time to time.

A list of researches carried out or directed by the different members of the staff in physics is given in detail below:

Researches under the direction of Professor E. F. Burton

The Superconductivity of free thin films and coated films of metals. In collaboration with J. O. Wilhelm and A. D. Misener.

Experiments were carried out on the superconductivity of films of tin deposited on non-superconducting cores, and show that there is a limiting thickness below which superconductivity does not set in. When films that are superconducting are coated on the outside with a non-superconducting metal, they lose the power of becoming superconducting when the thickness does not exceed a certain amount.

The Magnetic Properties of Superconductors. By F. G. A. Tarr and J. O. Wilhelm.

Tests of the relation of superconductors to magnetic field were carried out by experiments supplementary to those of Meissner and Ochsenfeld. When a superconducting metal was taken from above its transition point to below, there was observed a change in flux in the region which indicates that the superconductor acts as though its permeability were zero.

The Effect on Superconductivity of Annealing Alloys. In collaboration with J. O. Wilhelm and A. S. Gano.

Standard alloys of lead and thallium were made up, and various samples annealed for different lengths of time, and the transition point and transition interval derived.

Crystal Structure of Pb-Tl Alloys. By C. R. A. Day and A. S. Gano.

Debye-Scherrer X-ray Spectrograms of four Pb-Tl alloys (30 atomic percent. Pb), which were annealed 0, 1, 12, 250 hours respectively, and whose superconductivity had been measured were obtained. No apparent connection between the change of lattice constant with time of annealing or variation in superconductivity was indicated.

The Effect of Cathode Rays on Hydrophobic Sols. By Miss M. Annetts.

The stability of positively and negatively charged sols is decreased on exposure to cathode rays. Samples not coagulated after exposure were tested for change in stability by measurement of electrolyte sensitivity and cataphoretic mobility. The results are in agreement with theoretical considerations.

The Specific Heat of Hydrophobic Sols. By Miss M. Annetts and H. Sims.

Measurements of the specific heats of gold and copper sols have been made by the method of cooling. The results indicate that these specific heats are not appreciably lower than that of pure water.

Nuclear Moments of Antimony Isotopes—Discussion of Lande's Theory. By M. F. Crawford and S. Bateson.

Hyperfine structures in the spectrum of Sb IV have been investigated. Analysis of the hyperfine patterns shows that the I-values of Sb_{121} and Sb_{123} are $\frac{5}{2}$ and $\frac{7}{2}$ respectively, in agreement with those of Badami. The magnetic moments of Sb_{121} and Sb_{123} calculated from the magnitude of the hyperfine separations in Sb IV are 4.0 and 3.2 proton magnetons, respectively. For antimony the ratio of the $g(I)$ factors is $\frac{g(I)_{121}}{g(I)_{123}} = 1.82 \pm 2$ percent. The application of this accurate ratio criterion to the Landé $g(I)$ formula leads to a value $g_s = 3$ for the magnetic factor of the proton spin, instead of 4 as found by Landé. Further the value $g_s = 3$ gives slightly better general agreement between the observed and calculated $g(I)$ factors than is obtained for $g_s = 4$. However, since no specific value of g_s will satisfy the accurate ratio criterion for all the odd $Z_{odd}\ M_{odd}$ isotopes to which the test can be applied, it is concluded that the theory is incomplete, as indicated by Landé.

Hyperfine Structure in the Spectra of Lead. By M. F. Crawford and A. M. Crooker.

The spectra of Pb, II, III, and IV have been photographed in the region 2200-9000 A with a twenty-one foot concave grating. The numerous hyperfine structures observed have been consistently interpreted using the theory developed by Goudsmit and others and Aston's value of the abundance ratio of the three isotopes $Pb_{206,\ 207,\ 208}$. Both of the even isotopes Pb_{206} and Pb_{208} always show single components; thus $I = 0$ for both isotopes. These components are nearly coincident except, in general, when the transition involves configurations of widely different types. For example, in Pb III transitions between even and odd terms of the $6\,snx$ type show shifts less than 0.1 cm^{-1}, whereas transitions between these terms and terms of $5d^9 6s^2 6p$ or $6p^2$ show shifts of the order of 0.5 cm^{-1}. Similar shifts are observed in Pb II and Pb IV amounting in the latter case to 1 cm^{-1}. The odd isotope Pb_{207}, $I = \frac{1}{2}$, accounts for the remaining components. The number, position, and intensity of these components fit the theory of magnetic hyperfine structure very well. In the $6s\,5g$ configuration of Pb III anomalous hyperfine structure is observed. This is interpreted by the theory of Goudsmit and Bacher as a coupling effect.

Hyperfine Structure in Bi IV, Bi III, and Bi II. By M. F. Crawford and R. Richmond.

The hyperfine structure of lines of Bi IV, Bi III, and Bi II in the spectral region 2000 A to 9000 A have been investigated with a twenty-one foot concave grating. The spectra were excited by an electrodeless discharge in bismuth vapour. The hyperfine separations of terms of Bi IV, recently classified in this laboratory, as well as the hyperfine intervals of a number of previously investigated terms of Bi II and Bi III have been evaluated. The results are discussed and compared with theory. The effect of multiplet perturbations on the hyperfine intervals is clearly evident. An interesting case of hyperfine structure perturbation occurs in the $6s7p$ configuration of Bi IV, and is explicable by Goudsmit and Bacher's theory as a coupling effect.

Nuclear Mechanical and Magnetic Moments and their Dependence on Atomic Number and Mass Number. By Norman S. Grace.

Atomic nuclei are grouped into four classes depending upon whether Z and M (atomic number and mass number respectively) are even or odd. The large differences which are found to exist between mechanical and magnetic moments of the four nuclear classes are illustrated by a graphical method (employed earlier, Phys. Rev. 44, 361, 1933) which is extended to include much additional experimental data. These data are discussed with particular reference to recent theories of the constitution and structure of atomic nuclei.

The Absorption Spectra of Solutions of the Alkali Metals in Liquid Ammonia in the Visible and near Infra-red Regions. By L. B. Leppard.

All the alkali metals dissolve in liquid ammonia, forming solutions of a blue colour which is probably due to the valence electron of the metal in combination with an ammonia molecule complex. A quantitative determination of the absorption coefficient in the named region at different concentrations was undertaken with the purpose of correlating its behaviour with that of the known anomalous electrical conductivity.

Absorption Spectra of Single Crystals of Rhombic Surfaces. By H. Grayson Smith and R. H. Craddock.

The absorption spectrum of rhombic sulphur has been studied in the visible region, using polarised light with the direction of vibration parallel to each of the three crystallographic axes.

On Sensitised Fluorescence in Mixtures of Alkali Metals. By H. L. Welsh.

The phenomenon of sensitised fluorescence is studied in mixtures of the vapour of sodium and another alkali metal, namely potassium rubidium, or caesium. Using the D-lines of sodium as the source of excitation the sensitised fluorescence of the other metal present consists, except in the case of caesium, only of the resonance lines of the metal.

X Rays and Particle Size. By H. J. C. Ireton and C. R. A. Day.

This paper deals with the variation in the X-Ray Laue lattern obtained with quartz crystal particles of differing but definite sizes.

Abnormal X-Ray diffraction produced through Ice. By W. F. Oliver.

It has been found that ice formed at low temperatures by distillation under low pressure gives rise to X Ray diffraction bands similar to those observed for water. An examination of these bands should indicate whether or not they originate in the same way as halos produced by liquids in which case they are considered to be indicative of a transient arrangement of the molecules governed by distances of closest approach in their thermal agitation.

The Reaction of Thin Films of Water to High Frequency Currents. In collaboration with L. G. Turnbull.

These experiments are a continuation of those carried out formerly by Burton and Pitt, on the effect of moisture in substances brought within the influence of electromagnetic fields connected with oscillating circuits.

Measurement of Dielectric Constant of Conducting Solutions. By R. W. McKay.

A method of measurement of dielectric constants has been developed suitable for use with dilute solutions of electrolytes. Measurements have been made on solutions of sodium chloride, copper sulphate, and magnesium sulphate at 2×10^6 cycles frequency.

Measurements of the Velocity of Sound in Low Temperature Liquids at Ultrasonic Frequencies. By Arnold Pitt and W. J. Jackson.

A piezo-electric quartz plate is driven by a high frequency generator to produce standing waves in a liquid column. The wave-length is measured by noting the crystal response as the reflector is moved.

A Visual Tuning Beat Frequency Indicator for Audible Frequencies. By Arnold Pitt.

This device is arranged to indicate the state of frequency synchronisation between a standard frequency and an impressed frequency. It enables the operator to determine in cycles per second any deviation of the impressed frequency either above or below the standard.

The Influence of a Magnetic Field on a Dielectric Constants. By A. C. Young.

The experiments were carried out to determine the influence of a magnetic field on a dielectric constant of oxygen and nitrogen gases at 150 atmospheres, and on the dielectric constant of liquid air, liquid hydrogen, and liquid helium.

On the Theory of Specific Isotope Shift. By J. K. L. MacDonald.

Conditions are established for the non-vanishing of the matrix-elements' specific isotope contributions. In particular the rule that the $M_{L's}$ must differ by 0 or 2 strictly limits the possibilities of perturbations by other configurations. (Isotope) sum-rules for $5s6p$ Sb IV states are developed and should hold even more accurately than the corresponding magnetic interaction sum-rules.

Atomic Statistical Fields as a Mathematical Problem. By J. K. L. MacDonald.

Some integral properties of quadratically integrable solutions of Schrodinger's equation are developed for use in an investigation of maxima. These properties are now being considered as a basis for a more exact method of approximating to many particle energies in wave mechanics.

Extension of the Debye-Hückel Theory of Electrolytes to Stronger Concentration. By S. Levine.

The statistical method of Kramers for finding the electrostatic free energy associated with ions in a solution of electrolytes is extended to include higher approximations. The difficulty inherent in the use of the macroscopic dielectric constant is avoided and the actual force between any two ions is calculated by considering the polarisation and electrostrictive effects on neighboring water molecules.

Diffusion of Hydrogen and Helium through various Solids. By E. O. Braaten and G. F. Clark.

In a study of the diffusion of gases through solids the following results have been obtained: (1) both hydrogen and helium diffuse readily through red wax at room temperature; (2) helium diffuses through a single quartz crystal at 120° C; (3) no diffusion of helium through palladium could be detected at 500 °C. Experiments on the variation of diffusion of helium through thin fused quartz with pressure at a low temperature were also carried out.

Viscosity Effects near Curved Surfaces. By G. N. Patterson.

The motion of air near surfaces of large and small curvature has been investigated. Experiment has verified the theoretical work of Blasius who showed that viscosity effects, combined with a pressure gradient opposing the motion, would result in the reversal of the flow near the surface and the subsequent breaking away of the flow. Curves of velocity distribution, obtained by photographic methods, show good agreement with the corresponding theoretical curves.

Viscosity Effects in Divergent Channels. By G. N. Patterson.

The flow of air at low Reynolds' numbers in channels of both rapid and gradual divergence has been investigated. Three types of flow forms along with the transition states between them have been photographed. Curves of velocity distribution showing the change in viscosity effects produced by a variation of Reynolds' number have been obtained.

Experiments on the Faraday Effect with Hydrogen and in Helium both in Gaseous and in Liquid States at low Temperatures. By F. G. A. Tarr.

The Sedimentation of Small Particles in Vertical and Inclined Tubes. By Miss M. Annetts and Hamilton Sims.

These were experiments carried out on the influence of tilting the tube, on the rate of settling of finely divided copper oxide in water. This was suggested by the recently developed angular centrifuge produced in Sweden.

On the influence of arsenic in its different forms on the growth of yeast cells. By Hamilton Sims.

Experiments on the reaction of mice inoculated with sarcoma to diet and the application of arsenic colloid. By G. A. Purdy.

Light absorption by blood serum in the region of the ultra-violet. By G. A. Purdy.

The Specific Heat of Metals at Low Temperatures of Liquid Air, Liquid Hydrogen, and Liquid Helium. By S. M. Dockerty.

This work is being carried under a Scholarship from the National Research Council of Canada, in continuation of work on higher temperatures undertaken at Dalhousie University.

Estimation of small traces of metals by means of spectroscopy, and by means of colorimetry, carried out in conjunction with the Department of Chemistry of the Ontario Agricultural College. By H. W. Lohse.

The colorimetry work was carried out with a photoelectric cell. This work deals with the estimation of traces of metals of various kinds in different soils.

Neutralisation and Ionisation of High-velocity Rare Gas Ions by Collision with Dissimilar Rare Gas Ions. By H. F. Batho.

Measurements were made of the mean free path for neutralisation of a positive ion, and of the mean free path for ionisation of a neutral atom when a beam of positive ions and neutral atoms of one rare gas passes through a different rare gas with high velocity (5000 to 25000 volts). The method and apparatus used are similar to those used in previous work on the change of charge of rare gas ions and atoms colliding with similar atoms (H. F. Batho, Phys. Rev. 42, 753 (1932).

Researches under the direction of Professor John Satterly, in collaboration with J. A. McPherson—

A Study of Ripples in Jets of Water and Mercury with a Determination of the Surface Tension.

Following up the methods used by Maass, Brinkworth, and Tyler, ripples in jets have been studied directly when the jet strikes an obstacle and stationary ripples are produced, and stroboscopically when the jet is free but vibrations are imparted to the nozzle by fastening it to an A.C. buzzer.

Researches under the direction of Professor L. Gilchrist.

Professor Gilchrist left on June 21, with a party consisting of F. G. Millar, F. J. P. Consitt, and I. Gringorten, on research for two months with various geophysical methods to be tested in the Sudbury Basin. This work is being carried out conjointly by the department of physics and the Geological Survey of the Dominion Government.

The correlation of magnetic anomalies with geological and gravitational conditions in parts of Saskatchewan and Alberta by J. E. Duncan.

Research under the direction of Professor H. A. McTaggart in collaboration with G. A. Meek—

Thin films on a Water Surface.

Films of mixtures of Triolein and Tripalmitin in various proportions deposited on water from a volatile solvent show under the microscope a Brownian movement and surface crystallisation at pressures above the breaking point, accompanied by a hysteresis in the pressure-area curves.

Researches by Professor D. S. Ainslie.

Two new laboratory instruments have been designed as follows:—(1) An electromagnetic balance; (2) Neon Lamps for electrical measurements and demonstrations. References to these will be found in the list of publications.

Research by Dr. F. Grayson Smith.

Dr. Grayson Smith collaborated with a group working on Superconductivity, and has now in process of preparation a theoretical paper, dealing with this subject, which will be submitted for publication during the summer.

Dr. Colin Barnes has continued his collaboration with Dr. A. R. Gordon of the Department of Physical Chemistry in dealing with subjects relating to the application of recent developments of mathematical physics to physical chemistry.

Physiology, under direction of Professor C. H. Best

The work on the significance of choline in fat metabolism has progressed rapidly and certain of the more chemical aspects of the investigation have been facilitated by the visit of Professor Harold J. Channon of the department of biochemistry, University of Liverpool. Evidence has been secured by Miss Huntsman and Dr. Best that choline exerts curative as well as prophylactic effects upon the livers of rats made fatty by dietetic means. Evidence is accumulating that choline is an essential dietary constituent. The work in this department on this subject has been closely correlated with the researches of Dr. MacLean and Miss Ridout in the School of Hygiene.

Mr. J. P. Fletcher has made many analyses of the choline content of various food materials and will complete his survey of choline distribution in the body.

The colony of diabetic dogs which has been maintained and studied in this department since 1921, continues to make possible contributions in the field of carbohydrate metabolism.

Dr. J. Markowitz has facilitated several investigations during the year by the application of his experience and skill in experimental surgery to problems under investigation in the department. Dr. Waters and Dr. Markowitz have investigated the relation of the liver to phosphate metabolism. Miss Griffiths and Dr. Waters have studied the formation of liver glycogen from various monosaccharides.

Dr. Rhoda Grant is studying the formation of glycogen from lactic acid and the possible significance of acetyl choline in this connection. She has been the recipient of a grant from the Banting Foundation.

Professor N. B. Taylor and Dr. C. B. Weld completed the first stage in their investigations upon intestinal obstruction early in the academic year. The results of these researches, which were conducted in collaboration with Dr. G. K. Harrison, were published in September. During this session other phases of the problem are being investigated. So far, a study has been made of the reactions to obstruction and distension of an exteriorised, skin-covered loop of duodenum. Mr. J. F. Sykes and Dr. C. Aberhart have collaborated in these investigations. Work upon calcium metabolism and parathyroid function is being pursued. A circumscribed research concerning the action of irradiated ergosterol upon the absorption and excretion of calcium compounds was completed, as has also been one upon the relation of vitamin D action to parathyroid function. The results of the former research have been published this year; a paper embodying the latter has been submitted for publication. Interesting results have been obtained regarding the action of ergotoxin upon convulsions produced in various ways, e.g. parathyroidectomy and phosphate injections. Dr. Weld this year, as in previous years, has divided his time between this department and the Hospital for Sick Children. Through this connection experimental studies upon calcium metabolism made in this department have been correlated with investigations of cognate problems in the clinic.

Dr. Fidlar's work of the past year has been confined largely to attempts to define certain phenomena in air analysis. The irregularities appear to be related to oxygen.

The section of general physiology, under Professor Laurence Irving, has had a very interesting year. The practical course was attended by thirty-eight students. Six were graduates, four were from the Physiology and Biochemistry course, two were from Food Chemistry, and twenty-six were from the Biological and Medical Sciences course. Mr. K. C. Fisher's assistance has been very valuable in the preparation of experimental material. After comparison with similar courses elsewhere, the one available here seems to present an exceptionally good approach to vital problems by physiological methods. The importance of maintaining the physiological point of view is emphasised, for it is far too common in this subject to accentuate the chemical and physical definition of living processes to the point where their vitality disappears.

The methods of general physiology apply to both mammalian and "comparative" material. Consequently they should prove useful in the development of all branches of physiological and biological knowledge. While it is gratifying to have the interest of students from other departments, it also places a strain upon the staff and resources of the department of physiology. It is desirable that more adequate provision for the work in general physiology or experimental biology, as it may equally well be called, be made. The subject has demonstrated its usefulness in the preparation of students for work in other branches of the biological sciences and in productive research.

Professor Irving has carried on research in the following subjects: With Miss J. F. Manery on the chemical changes in trout eggs during development. The eggs were donated by Mr. L. C. A. Strother of Horning's Mills, Ontario, and the Ontario Department of Fisheries. The eggs are very satisfactory material on account of the fact that the development of the embryo proceeds from two months on the isolated store of food in the original eggs.

The respiration of the embryonic fish heart has been studied with Mr. K. C. Fisher.

In line with the known sensitivity of the heart toward asphyxia, its rate of beating is depressed by the respiratory poisons CO, CN and by O_2 lack. The chemical action of CO can be very precisely studied and its effect upon the heart shows the essential operation of the catalytic system in oxidations for the maintenance of the heart beat.

Studies on the effect of temperature upon the heart beat have been continued.

The control of the circulation to the dog's brain has been studied with Mrs. M. S. Welch. It is possible for the circulation to the brain to increase while the muscular circulation diminishes. In case of asphyxia, this preferential treatment would have considerable protective value in conserving the available oxygen from the brain, which is the most sensitive and vital tissue. The stimuli involved in this preferential control of the blood supply to the brain have been considered, and the nervous pathways are being studied.

The respiration of liver with normal and disturbed fat metabolism has been studied by Mrs. Welch. The material was made available from the experiments of Dr. Best and Miss Huntsman, and it is likely that it will afford a unique opportunity to penetrate into the subject of fat metabolism in the liver tissue by highly developed methods for the study of tissue respiration.

The lactic acid forming capacity of muscle from various animals has been examined, continuing a line of investigation in progress for several years.

The postmortal acid formation of liver was examined by determining the lactic acid and CO_2 contents. There are indications that other acids than lactic acid are formed but their nature is undetermined.

Last summer five graduates from the department attended the Marine Biological Laboratory at Woods Hole for research in physiology. They derived great profit from the study of new material and association with a cosmopolitan group of investigators and students. In addition they made an excellent showing, for Mr. A. L. Chute was appointed a junior instructor for 1934, and the Collecting Net Fellowship for 1934 was awarded to Mr. O. M. Solandt. Several members of the staff will attend again this summer for the continuance of research work. This work has been greatly aided by individual grants from the Medical Research Best Fund. An investigation of the adaptation of seals for diving is planned for this summer. The work is aided by a grant from the Elizabeth Thompson Science Fund of Cambridge, Massachusetts, and the continued aid of the Medical Research Best Fund. The work is to be carried on at the Atlantic Biological Station of the Biological Board of Canada, at St. Andrews, New Brunswick. The peculiar ability of diving mammals to survive without breathing for long periods has never been investigated satisfactorily. Methods have been carefully developed for the investigation to such a point that it is certain that significant results will be obtained. The methods are also along lines which will probably yield important information regarding the control of respiration and circulation generally; for the control, which is extremely complex in ordinary mammals, should appear in an emphatic fashion in the seals with their highly developed ability to resist asphyxia.

Psychology, under direction of Professor E. A. Bott

During the session 1933-4, eleven students were awarded the degree of Master of Arts working under various members of the staff in psychology. The names of these students and the subjects of their theses were:

Mrs. R. W. Bartlett—An analysis of daily home activities of the preschool child.
Miss S. Blumenthal—An analysis of the learning capacity of young children to reproduce musical notes.
Mrs. G. M. Branscombe—Behaviour problems of preschool children in foster homes.
R. B. Davey—The value of school records in interpreting the present standing of public school pupils.
Miss E. Einbinder—An exploratory study of attitudes towards the Jews.
G. M. Johnston—A study of some relationships between psychological test scores and ratings of teaching efficiency.
L. L. McQuitty—A method of scaling and scoring intelligence tests.
Miss M. L. Northway—Relationship between difficulty of the task and ability of the student in whole-part learning.
H. L. Pottle—An analysis of children's lies with particular reference to a school situation.
K. D. Whatmough—The companionships of school children.
Mrs. A. E. L. Williams—A study of religious attitudes and activities in a group of adolescent boys.

Additional researches have engaged the staff during the past session. These are in part problems concerning general principles in psychology and in part the application of principles in practical situations of daily life.

The following investigations on general principles have been in progress:

E. A. Bott with G. P. Cosgrave—The technique and construction of apparatus for the photographic measurement of eye-movement by the corneal reflection method.
S. N. F. Chant with G. P. Cosgrave—The use of correlation and multiple-factor methods of analysis for interpreting the values obtained in psychology by objective and subjective measurement.
S. N. F. Chant with C. R. Myers—The development of scales for the measurement of attitudes, designed to have value in the clinical appraisal of mental health and the diagnosis of mental disability.
W. Line—The theory of individual differences with special reference to personality variables relating to mental health.
J. D. Ketchum—The technique of obtaining and analysing autobiographical life histories of young persons and adults. Generalisations regarding personality types, effects of position in the family and in the group etc., are sought and these are compared with the subjects' scores on various psychological tests.
K. H. Rogers—Organisation of a scale of developmental norms for clinical use with infants who are to be placed or adopted through a Child Placement Agency.
K. S. Bernhardt with the co-operation of the department of paediatrics—The investigation of the effects of various deficient diets on the learning capacity of rats.

On the side of application of psychological principles there have been important developments during the year. Certain members of our staff have official connection with the Ontario Department of Health, the Toronto Juvenile Court, the Toronto Infants' Home, and others have close contact with the Toronto Board of Education and industrial organisations. These relationships afford unparalleled opportunity for investigating psychological problems relating to practical situations.

At 71 St. George St., the department has recently organised a laboratory for the psychological study of accident-prone cases, under the direction of Professor Chant and Mr. Cosgrave. While these quarters are far from adequate, they will permit the beginning of work upon a number of practical problems of urgent character. Attention for the present will be directed solely upon traffic problems and certain types of industrial accidents.

At the Juvenile Court, Dr. Rogers, Dr. Anderson and Professor Blatz are engaged upon a detailed study of the social background of delinquents with the objective of utilising principles of vocational guidance for the better adjustment of such cases.

Professor Line with the assistance of graduate students and the co-operation of the Public Schools has been engaged upon methods of appraising teaching efficiency and upon revision of the public school curriculum in accordance with psychological principles.

Mr. C. R. Myers in his capacity as psychological consultant in the Ontario Hospitals Service has furthered a number of studies with the aid of graduates from this department who are employed in the Service. During the past year their attention has been mainly upon: The organisation (and publication) of a comprehensive curriculum of occupational instruction for mental subnormals in institutions. In addition to revealing many unsolved psychological problems, this compilation is proving of great assistance in connection with the establishment of a new Training School at Cobourg.

The evaluation in terms of functional activity of experiments in drug therapy upon epileptic patients.

The standardisation of procedures for the psychological treatment of cases of speech defect.

Mr. J. D. Ketchum has advanced his project of mapping areas of the City of Toronto in which the relations obtaining between types of district and kinds of behaviour characteristic of their residents is being revealed. The effects of the social environment upon the adjustment of the individual are proving to be of unquestionable importance.

A separate report upon researches in the field of Child Psychology and Parent Education is presented from the St. George's School for Child Study.

Surgery, under direction of Professor W. E. Gallie

It has been the policy of the department of surgery to combine whenever possible in research work with other university departments. This has been done with physiology in the work of Dr. D. W. G. Murray in the study of the effect of heparin in preventing thrombosis. Venous thrombosis and pulmonary embolism are serious dangers after operation and the research which is under the direction of Professor Best is directed towards finding a way to prevent it. Some progress has already been made.

Another study is being conducted by Dr. H. Botterell of the department of surgery and Dr. E. J. King of the department of experimental medicine, under the direction of Dr. Banting, on the effect of phosphatase on the healing of fractures. This research is directed towards finding ways of increasing the rapidity of union of fractures.

During this year, with the assistance of Professor Klotz, a private pathological laboratory has been established by the department of surgery in the Banting Institute. This laboratory provides the opportunity for any member of the department to pursue studies of pathological material and to have specimens prepared. The laboratory is equipped with photographic and microphotographic apparatus so that the department no longer needs to depend on other departments for assistance in this regard. Dr. S. D. Gordon is using the laboratory in a study of gastro and duodenal ulcer and Dr. D. W. Mitchell in a study of the pathology of the prostate gland.

Other researches in progress are:

Clinical applications of staphylococcus antitoxin and staphylococcus toxoid; and attempts at the production of pyogenic brain abscesses—Dr. W. S. Keith.

Attempts at the production of tendon sheathes—Dr. A. W. Farmer.

Thrombosis of axillary veins and interference with surrounding lymphatics. Attempts to produce epidermoid cysts in bone by implants—Dr. J. H. Couch.

A clinical study is being made in the General Hospital by Dr. W. K. Welsh and Dr. Dolman of the effect of the staphylococcus toxoid and staphylococcus antitoxin which is being prepared in the Connaught Laboratories. Promising results, particularly in the case of the toxoid have been observed.

Report of the Committee for Experimental Research in Medicine

Dr. D. E. Robertson, Secretary
J. G. FitzGerald, M.D., LL.D., Convener

The Committee for Experimental Research in Medicine was organised originally to provide laboratory investigations and experiments carried on by members of the clinical departments in the Faculty of Medicine. More recently (since the occupation of the Banting Institute) additional departments have joined the original group to effect still greater co-ordination of clinical and laboratory work in medicine.

Unfortunately the serious reduction in university income has necessitated the complete elimination of the grant for the support of the work of the Committee. The continuance of activity has been made possible by the most generous support of the Department of Medical Research under the direction of Sir Frederick Banting. This aid has come from the Banting Medical Research Fund. To Sir Frederick, the members of the Committee and the departments to which assistance has been extended wish to tender thanks and appreciation.

It is earnestly requested by the Committee that the grant for the support of its work be restored at the earliest possible moment. The maintenance of high standards of efficiency by all of the clinical and of certain of the laboratory departments in the Faculty of Medicine is largely contingent upon the adequate provision of opportunities for research and animal experimentation. Helpful co-operation and teamwork has characterised the efforts of those members of the various departments engaged in the investigation of problems under the aegis of this Committee.

Dr. D. E. Robertson, who has continued, very kindly, to act as Secretary of the Committee, has submitted the following list of members of the staff to whom authority was granted to carry on investigations during the session:—

Dr. A. B. LeMesurier, a study of the production and treatment of Volkmann's ischaemic paralysis.

Dr. R. A. Cleghorn, investigation of the functions of the secretion of the adrenal cortex.

Dr. C. B. Weld (with Dr. Alan Brown) a study of the effect of Vitamin D on the acidity of the gastric biliary and pancreatic secretions.

Dr. Stuart Gordon experiments in cartilage grafting.

Dr. D. E. Robertson, experiments on plastic operations on the duodenum.

Dr. W. S. Keith, investigation of the production of chronic brain abscess.

Dr. J. H. Couch, the production of epidermoid cysts in soft tissues and in bone, by implants; the ligation of axillary on subclavian veins and the injection of various substances; (on the assumption or hypothesis that so-called primary thrombosis of the axillary vein is comparable to phlegmasia alba dolens, and is a low grade infection rather than traumatic in origin); the performance of the Mann operation for the production of peptic ulcer and the modification of this by leading the alkaline flow into the stomach.

Dr. A. W. Farmer, investigations to ascertain the possibility of the formation of channels in which tendons may slide.

The late Dr. V. J. Harding and Dr. T. F. Nicholson, a study of the action of posterior pituitary extracts followed by hypertonic saline solution, on pregnancy.

Dr. Gordon Murray, various studies.

Report on Research in the Faculty of Dentistry

The following problems have been under investigation in the Faculty of Dentistry during the past session:

A Study of Mandibular Relations and Movements, with special reference to the use of the face bow in Prosthetic Dentistry, by D. G. Johnstone, D.D.S.

Some Fundamental Factors in Teaching Dental Prosthesis, including a coordinate chart for use in laboratory course, by J. H. Mullett, D.D.S.

Periodontal Pathology: Diffuse Atrophy, by E. C. Purdy, D.D.S.

Quantitative Analysis of Mucin in Saliva and Its Relation to Health and Disease, by T. L. Marsh, D.D.S.

A Study of Necrotic Gingivitis, by D. McG. Tanner.

A Study of Tissue Changes in Abnormal Teeth and Their Relation to Surgery, by J. H. Johnson, D.D.S.

A Further Study of Kinematics of the Human Mandible, by F. M. Lott, D.D.S., B.Sc. (Dent.).

School of Engineering Research, Faculty of Applied Science and Engineering

Owing to lack of funds the School of Engineering Research was able to employ only one research assistant during the past year. This condition, naturally, seriously interfered with the progress of research, and imposed an additional burden upon those members of the staff who endeavoured to maintain the interest of their departments in research, and to push their investigations to further stages of development.

The progress of the School during the past year has been as satisfactory as could reasonably be expected in view of this shortage of research workers. Regular meetings of the Committee of Management have been held, at which progress reports of researches were read and plans for the future discussed. The Committee was very gratified to learn that a partial restoration of funds for research has been promised for the coming academic year.

In addition to the valuable experimental results obtained, this research movement has injected a fine enthusiasm for research into this faculty, which has had a marked effect upon both the staff and undergraduate students, and which is reflected in the rapid growth of the work of the Graduate School in this Faculty. It is the Committee's earnest hope that the present curtailment of research funds will be of short duration, and that this pioneer research movement within this faculty will be enabled to continue its efforts toward the solution of problems having to do with natural resources and engineering practice.

Following is a list of researches in progress during the past year.

Department of Civil Engineering

Under the direction of Professor C. R. Young
(with K. B. Jackson)

Relative Rigidity of Welded and Riveted Connections. A lengthy report on this investigation has already been made to the National Research Council and a paper has been submitted to that body for publication in the Canadian Journal of Research. Results of fundamental importance relative to the elastic behaviour of the types of connections studied have been reached.

(with W. B. Dunbar)

Pressure on Deeply Buried Sewers. The final report on the pressure observations made with Goldbeck cells on the deeply buried sewers of the North Toronto System is now in draft form. The drawings have been completed and within the next couple of months a paper should be available for publication.

Lateral Support of Steel Columns and Struts. The report on the experimental study of the lateral support of nineteen steel columns is in course of preparation and should be finished this summer.

(with A. E. Berry and L. A. Kay)

Disposal of Dairy Wastes. Work done in this field by Mr. Kay in connection with his thesis for the M.A.Sc. degree has yielded useful results which should be incorporated in a research paper. Such will be prepared in the near future.

(with A. E. Berry and W. S. R. Edmonds)

Deep Well Water Supplies. The study of the supply of water from deep wells carried on by Mr. Edmonds has yielded important results meriting the presentation of them in a research paper. This will be made available shortly.

(with M. W. Huggins)

Thrusts of Arches with Two and Three Hinges. The preparation of a paper on the theoretical and experimental work on this subject is under way.

(with G. V. E. Logan)

Results obtained in a design and experimental study of a 300 ft. rigid-frame span warrant publication in a brief research paper. It is hoped to offer such in the near future.

(with J. K. McBride)

A study of the relative adaptability of the Cross method and the Goldberg method of analysis of wind bracing bents has revealed information of importance to designing engineers. It is hoped to incorporate some of this material in a short research paper in the near future.

Department of Mining Engineering

Under the direction of Professor H. E. T. Haultain

(with B. S. Crocker)

Mill products from several of the mines in the North country have been examined using a special super-panner concentrating device which was developed in the Mining laboratory in a recent research on tellurides, as well as apparatus for the briquetting and polishing of fragmentals. Useful results have been obtained which have led to installations of similar apparatus in some of the Northern mines.

(with I. J. W. Johnston)

Work has been continued on the problem of size analysis of very finely divided material using apparatus developed last year. Cement was prepared in these experiments under the direction of Professor C. R. Young.

A commencement has been made on a study of the viscosity of mixtures of water and fine powders.

Under the direction of Professor F. C. Dyer

The problem of cleaning seeds has been continued. The large machine in the Eddy Seed Cleaning Company's plant has demonstrated that the process devised is workable on a large scale. A working model machine has been built incorporating several new devices. Based on the information obtained from the model a full sized machine is to be constructed, considerably lighter, and of much greater capacity than the above mentioned machine. The investigation has indicated several difficulties associated with the refining of seeds as obtained from the farmer. Most of these problems have been solved. The work is continuing with a view of separating other weed seeds from the clovers.

Under the direction of Professor J. T. King
(with S. E. Wolfe)

Films at the contact of slag and assay buttons often affect the accuracy of the resulting assays. They are the result of the presence of matte, of speiss, or of other causes. This problem is under investigation.

The methods of determining gold in cyanide solution in common use in this country have been studied with a view to increasing their accuracy in routine tests. Encouraging progress has been made.

A research started about 1924 on the general problem of "the effect of cupels on silver loss" has been concluded. The nature of the work has been indicated in previous reports. Many of the results and conclusions are of practical application by the practicing assayer in his every day work as well as being of import to those in charge of works and engaged in the buying and selling of ores. An improved cupel has been designed and used with success in mine and refinery assay offices. An article covering the research has been submitted for publication in the Bulletin.

Department of Mechanical Engineering

Under the direction of Professor R. W. Angus

Flow in open channels with special reference to the hydraulic jump. This is the subject of a thesis being written by a student preparing for the Ph.D. degree. Considerable progress has been made and there is good prospect of results next session.

Cavitation research. The apparatus for this study has been set up and some preliminary measurements have been made and the work will be continued in September by the staff. This problem is of great importance to the industries.

Under the direction of Professor E. A. Allcut

A paper dealing with the experimental work carried out on Heat Transmission Through Insulating Materials has been accepted for publication by the Institution of Mechanical Engineers, England.

Department of Architecture

Under the direction of Professor E. R. Arthur

With financial assistance from the Centennial Committee some 40 photographs (20″ x 16″) have been prepared of Old Toronto Buildings between 1800 and 1834 and these will be exhibited in the Graphic Arts building at the Canadian National Exhibition.

A paper is being prepared for publication on Fort Henry at Kingston. The paper will be partly historical with photographs of the building and a very fine plan of the fortifications made from measurements and notes taken three years ago.

Department of Chemical Engineering

Under the direction of Professor J. W. Bain
(with W. M. Inouye)

Studies on lignin which have been in progress for three years have been continued, particularly with respect to oxidation, in an endeavour to isolate intermediate products. Also the reaction of lignin with carbon disulphide in alkaline solution has been investigated and a crystalline product isolated. It is proposed to investigate the composition of this compound. The results of this investigation were embodied in a thesis for the degree Ph.D.

(with A. G. Rogers)

The reactions of the lignosulphonic acids with sodium hydroxide and carbonate and with ammonium carbonate have been investigated. Two products of reaction have been isolated and will be investigated further. The nature of the substances formed on heating cellulose to 200° C. has been further investigated. The absence of six sugars has been determined, and that the chief constituent is a glucoside which is not readily hydrolysed. This work will be continued.

Under the direction of Professor M. C. Boswell

(with H. L. Sandford)

The investigation of the properties of ferrous sulphide, insofar as they throw light on the mechanism of the synthesis of a catalyst for the reduction of sulphur dioxide by hydrogen, has been completed and was presented by Mr. Sandford for the degree Ph.D.

(with F. A. Edmonds)

The study of the conditions influencing the yield of oxalic acid obtainable from cellulose has been continued.

(with W. E. Cowie)

The use of catalysts in the synthesis of compounds in sodium hydroxide fusions has been further investigated, particularly in the transformation of resorcin into phloroglucin.

(with G. P. Beal)

The properties of sulphur dioxide have been further investigated for the purpose of finding easily dissociated compounds the formation of which might serve as the basis of methods for the isolation of sulphur dioxide from gas mixtures.

Under the direction of Professor E. G. R. Ardagh

(with F. C. Rutherford)

The work upon the study of certain conditions affecting the formation of hydrazones and osazones has been completed. A second paper embodying these results has been prepared for publication.

(with H. W. Owens)

The investigation of certain aspects of the corrosion of iron has been continued. A paper on the mechanism of corrosion of iron in sodium chloride solution has been published in the Journal of Industrial and Engineering Chemistry. The work is still in progress.

Under the direction of Professor E. A. Smith

(with H. E. Ney)

The study of the thermal stability of Ontario peat has been continued for the purposes of obtaining information respecting the constitution of peat and some indication of possible uses of peat, either as a fuel or a raw material for hydrogenation.

Under the direction of Professor R. R. McLaughlin

(with Y. L. Wong)

A method is being worked out for the colorimetric estimation of arsenic. The work, which is in progress, indicates that a satisfactory method will be developed.

(13) PUBLICATIONS

FACULTY OF ARTS

DEPARTMENT OF ANTHROPOLOGY

McIlwraith, T. F.—*Recent Publications Relating to Canada: IX; Ethnology, anthropology and archaeology.* (Canadian Historical Review, March, 1934, pp. 116-121).

DEPARTMENT OF ASTRONOMY

Chant, C. A. and Burton, E. F.—*A Textbook of College Physics. Octavo, 541 pages, 575 illustrations.* (N.Y., Henry Holt and Co., 1933).

DEPARTMENT OF BIOLOGY

Craigie, E. H.—*The vascularity of parts of the cerebellum, brain stem and spinal cord of inbred albino rats.* (Journal of Comparative Neurology, Vol. 58, pp. 507-516, October, 1933).

Harkness, W. J. K.—*The maskinonge in Ontario.* (Rod and Gun in Canada, Vol. XXV, no. 10, March, 1934).

MacArthur, J. W.—*X-Ray Mutations in the Tomato.* (Journal of Heredity, Vol. XXV, pp. 75-78, February, 1934).

Linkage Groups in the Tomato. (Journal of Genetics, Vol. XXIX, pp. 123-133, April, 1934).

Piersol, W. H.—*Abstracts.* (Biological Abstracts, Vol. 7, No. 8; Vol. 8, No. 3).

Ricker, W. E.—*An ecological classification of certain Ontario streams.* (Publications of the Ontario Fisheries Research Laboratory, Vol. XLIX, University of Toronto Studies, Biological Series, No. 37, 1934).

Walker, E. M.—*On the anatomy of Grylloblatta campodeiformis Walk. Comparisons of head with those of other orthopteroid insects.* (Annals Ent. Soc. Amer., XXVI, No. 2, pp. 309-344).

The nymphs of the Canadian species of Ophiogomphus (Odonata, Gomphidae). (Can. Ent., LXV, pp. 217-229).

The Odonata of the Maritime Provinces. (Proc. N.S. Inst. Sc., Vol. XVIII, Pt. 3, pp. 106-128).

Book Review—Bibliographia Entomologica (Erich Schmidt). (Can. Ent., Vol. LXV, p. 216).

Book Review—Methods for the Study of the Internal Anatomy of Insects (C. H. Kennedy). (Can. Ent., Vol. LXV, p. 192).

DEPARTMENT OF BOTANY

Bannan, M. W.—*Vigour of growth and traumatic resin cyst development in the Hemlock Tsuga canadensis (L.) Carr.* (Trans. Roy. Soc. Can., Sect. V, Vol. 27, 1933).

Factors influencing the distribution of vertical resin canals in the wood of the larch—Larix laricina (Du Roi) Koch. (Trans. Roy. Soc. Can., Sect. V, Vol. 27, 1933).

Beck, E. C.—*The Precipitin Ring Test Applied to some Ustilaginaceae.* (Canadian Journal of Research, Vol. 10, 2, 1934).

Fitzpatrick, R. E.—*The life history and parasitism of Taphrina deformans.* (Scientific Agriculture 14, pp. 305-326, 1934).

Pady, S. M.—*Teliospose development in the Puccimastreae.* (Canadian Journal of Research, Vol. 9, pp. 458-485, November, 1933).

Russell, R. C.—*Studies of Take-all and its causal organism, Ophiobolus graminis Sacc.* (Dominion of Canada, Dept. of Agric. Bull. 170, n.s. 1934).

Thomson, R. B.—*Heterothally and the Seed Habit versus Heterospory.* (New Phytologist, Vol. XXXIII, No. 1, March 2, 1934).

A Seed-Plant Feature of the Root in Marattiaceae. (New Phytologist, Vol. XXXIII, No. 2, 1934).

Thomson, R. B. and Hull, Miss K. L.—*Physical Laws and the Cellular Organisation of Plants.* (Bot. Gaz., Vol. XCV, No. 3, March, 1934).

Truscott, J. H. L.—*Observations on Lagena radicicola.* (Mycologia 25, No. 4, August, 1933).

DEPARTMENT OF CHEMISTRY

Beamish, F. E.—*Microbomb for Determination of Organic Halogens.* (Journal of Industrial and Engineering Chemistry, Analytical Edition on September 15, 1933).

Freed, M.—*Critical Solution Phenomena.* (Trans. Roy. Soc. Can., (3), 27, pp. 179-181, 1933).

Gordon, A. R.—*The Calculation of thermodynamic quantities from spectroscopic data for polyatomic molecules; the Free Energy, Entropy and Heat Capacity of Steam.* (Jour. Chem. Physics, 2, p. 65, 1934).

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THE CANADIAN HISTORICAL REVIEW

The CANADIAN HISTORICAL REVIEW completed in 1934 its fifteenth year as a quarterly journal. It was founded by Professor G. M. Wrong as an annual in 1896 with the title of REVIEW OF HISTORICAL PUBLICATIONS RELATING TO CANADA. With a record of almost forty years of continuous publication the REVIEW takes its place, therefore, among the oldest historical publications in existence. The REVIEW is primarily devoted to Canadian history, but it also publishes material on such allied subjects as imperial relations, Canadian economics, geography, and public affairs.

The REVIEW had last year some sixty-five contributors from all parts of the Dominion and in some cases from other countries. In addition to historical articles and documents, it published some seventy book reviews, a list of graduate theses in preparation in over a hundred universities throughout the world, and notes on the activities of some seventy historical societies throughout the Dominion.

Among its most important contributions to the cause of Canadian scholarship is the publication in each issue of an annotated bibliography of the titles of books and articles on the subjects mentioned above. During the past year this list ran to over 1,400 titles. With the annual and decennial indices, it provides the only bibliography of its kind which is at present being published.

The REVIEW is published by the University of Toronto Press, under the editorship of Professor George W. Brown of the department of history, and Miss Alison Ewart.

(14) REPORT OF THE DIRECTOR OF UNIVERSITY EXTENSION AND PUBLICITY

(*W. J. Dunlop, Esq., B.A., B.Paed.*)

Throughout the academic year 1933-34 so many new opportunities for extension service have developed that it would appear that the foundations are being laid anew for a much greater structure in the sphere of adult education. Men and women everywhere are beginning to realise more fully that education is a continuous, life-long process and they naturally look to a university to provide the means by which they may learn. Without fully realising it, the University of Toronto has been one of the pioneers in what has become an important world movement—Adult Education. The provision of facilities for adult education is becoming an accepted function of universities everywhere.

The great problem which troubles parents whose sons and daughters are nearing the end of their courses in collegiate institutes and high schools is the selection of university courses for which these young people are best adapted. To assist in this selection is not exactly university extension but is probably a form of university publicity which is well worth while. Parents come with their sons and daughters to this office—scores of them come—and they ask for advice and guidance. Others make their requests in writing. Principals of secondary schools write to ask that some member of the staff come to the school, address the pupils, and see them individually or in small groups to answer their questions, to guide them in the selection of courses, and to make sure that they will have the required entrance qualifications. This year such invitations came from Timmins, North Bay, Perth, Belleville, Stirling, Dunnville, Vaughan Road, and Listowel. Principals, teachers, parents, and pupils seem to be grateful for this assistance. When one goes to a town or city for this purpose there are always other addresses to be delivered to local organisations, service clubs, or literary societies. The seven Normal Schools in Ontario are visited every year and the teachers-in-training are advised to take advantage of the Teachers' Course arranged for their benefit by the University of Toronto.

The weekly radio book review, asked for by the Canadian Radio Broadcasting Commission, was continued by Professor J. F. Macdonald of the department of English, University College, until almost the end of the academic year and will, it is expected, be resumed next autumn. This radio feature was, if one may judge from letters received, of pleasure and profit to thousands of listeners from Fort William to Halifax.

Also at the request of the Radio Commission, this office took charge of the arrangement of a series of twenty radio lectures given by members of the staff of the University of Toronto, McGill, Queen's, Western, McMaster, Dalhousie, and the University of New Brunswick. These lectures were invariably interesting, inspiring, and instructive. Something new, in Canada at least, was the arrangement of undergraduate debates by radio which was the work, in co-operation with the Canadian Radio Commission, of the committee appointed for this purpose by the Canadian Universities' Conference. Our department had charge of one series in Ontario, of one in Quebec and the Maritimes, and of the semi-finals and finals. The final debate, partly in English and partly in French, between a team speaking from the University of Manitoba and a team speaking from Laval University was of special interest to many people throughout the Dominion. It was won by Laval. These debates contributed much to a better understanding between English-speaking and French-speaking citizens of Canada and to a sense of unity among the undergraduates of all the Universities that were able to participate. To Mr. Thomas Maher, Vice-Chairman of the Canadian Radio Broadcasting Commission, and to his assistants, our thanks are due for cordial co-operation at all times. The radio is only on the threshold of its usefulness as a means for the promotion of adult education.

During the winter months this department co-operated with the National Council of Education in arranging lectures in university buildings by distinguished visitors from overseas. These were attended by large and interested audiences.

From the High School Board of the Township of York came a request that lectures be provided in the evening in Vaughan Road, Runnymede, and Memorial Collegiate Institutes chiefly for young men and women who, having completed their secondary education, are unable to find positions and whose parents have not the financial resources to enable them to attend the University. With the monetary assistance of the Ontario Department of Education, a series of twelve lectures in each collegiate institute has been arranged to commence next October the topics being:—1. Psychology. 2. The International Situation. 3. Current Economics. 4. How We Are Governed. 5. Liquid Air. 6. The Unemployment Situation. 7. Music. 8. Money. 9. Art. 10. Care of the Human Machine. 11. Ontario Pioneers. 12. Horticulture. This experiment will be watched with much interest. It will be one of the few enterprises in this department which cannot provide in fees the money to be expended on instruction.

After an interval of two years a university exhibit was again set up in the Ontario Government Building at the Canadian National Exhibition and was well patronised by visitors. If adequate space can be obtained, a larger exhibit will soon be in process of preparation for the Exhibition of 1934. Articles on the University and its work have been written for Toronto Centennial publications; newspapers and periodicals have carried more university news than in any previous year. The University of Toronto Monthly, of whose publication committee the director is ex-officio a member, has been supplied every month with items of interest regarding the University and has co-operated most satisfactorily in providing its readers with news of their Alma Mater.

With the approval of the President of the University, an invitation was sent out in February asking all those interested in adult education in Canada to attend a symposium to be held in Convocation Hall on May 22nd and 23rd. The purpose was to try to bring together those doing work in this field so that their experiences, ideas, and ideals might be pooled and also to try to discover what is being done for the cause of adult education throughout the Dominion. The success of the venture exceeded the highest expectations. Eighty-seven delegates, representing all the Provinces of Canada, attended and nearly all took part in the discussions. Forty-six mimeographed reports, constituting an excellent preliminary survey of the work, were presented and distributed to all present. Universities and Departments of Education were well represented as were also many voluntary agencies. The World Association for Adult Education and the American Association for Adult Education each sent a representative who brought greetings and encouragement. The University tendered the delegates a complimentary dinner in the Great Hall of Hart House when the President gave the official welcome and spoke on the importance of adult education. During the two-day session good progress was made and a committee, representative of every Province, was elected to carry on the task of unification of effort. This committee, having accepted an offer of the American Association for Adult Education to provide travelling expenses, met in Montreal on June 20th and proceeded with plans for the formation of a Canadian Association for Adult Education and for a more detailed survey of what is being done throughout the Dominion. It is expected that the proposed organisation, by producing co-operation, eliminating duplication of effort, serving the interests of all without thought of domination or control, gathering and disseminating information,will do a great deal to stimulate interest and develop further activity in the sphere of adult education throughout the Dominion.

Complying with the request of the University's committee in charge of the St. George's School for Child Study, the Committee on University Extension decided to take over the administration of the elementary classes in Parent Education for one year and, if the experiment should prove successful, to make these evening classes for parents a permanent feature of extension service. When the Senate has given its approval to this action of the Committee, the new classes will be added to the present list of evening tutorial classes.

In the Teachers' Course, which offers instruction leading to the degree of Bachelor of Arts in the Summer Session and in Teachers' Classes during the winter session, there were 595 teacher-students, and 169 were engaged in preparation for the coming Summer Session. Twenty-three were awarded their degrees at the June Convocation; probably half as many more will come up for the degree at the Convocation in November next. When it is noted that 371 have qualified for the degree in the past fourteen years, the contribution of this course to the advancement of the teaching profession in Ontario may be estimated. Fifty-four instructors were engaged in this work during the session. A Teachers' Class in first year pass French, with an enrolment of twenty-two, was carried on in Ottawa.

Tuition in the subjects of the Teachers' Course for the year has been given as follows:

SUMMER SESSION, 1933

First Year—History, English, economics, Latin, philosophy, botany, chemistry.
Second Year—English history, French, mathematics, philosophy, botany, chemistry.
Third Year—History, economics, Latin, philosophy, chemistry, botany.

For the above courses definite and systematic instruction was conducted by correspondence from October 1st to April 30th.

TEACHERS' CLASSES, 1933-34

First Year—English, history, French, psychology, German, mathematics, botany, astronomy.
Second Year—Economics, English, history, Latin, psychology, botany, astronomy.
Third Year—English, mathematics, French, psychology, botany, astronomy.

This department has gradually built up for the students of the Teachers' Course a library which is accessible to those living outside of Toronto. These books for the most part are on history and English and include four hundred volumes. During the past year there was a circulation of 500. It is hoped to add additional volumes to this library from year to year.

For the teachers in the winter classes a special shelf has been arranged in the library of University College. While there is, at present, a very limited number of volumes on this shelf, it has proved of great service, as it is open to them on the evening on which their class in history is held.

During the Summer Session twenty-five teachers, who are working towards specialist standing, were enrolled in classes in second year honour physics and third year honour English while one hundred and eight took instruction in subjects leading to degrees in pedagogy.

The Department of University Extension carries on a few correspondence courses for Ontario teachers who hold second class professional certificates and who wish to prepare for the study of upper school subjects in the courses offered during the summer by the Ontario Department of Education, and for Ontario teachers who wish to study commercial subjects in summer courses. As standards rise, the numbers in these correspondence courses naturally decrease but there were 157 Ontario teachers enrolled this year. In the Canadian Credit Institute courses there were 74 students and in the Chartered Life Underwriters' courses there were 141.

As in other years star maps for the four seasons of the year are sent out to individuals and to various organisations, such as the Tuxis Square, Girl Guides, Boy Scouts' groups.

Theses on economic topics such as the pulp and paper industry, the mining industry, and fur farming are available for loan to interested persons. The demand for these theses is more than local as they have been mailed all over Canada and the United States, and some have been loaned to correspondents in Europe and South America.

The Course in Occupational Therapy was not offered this year because the number of applicants was not sufficient. Nor would the Course in Physiotherapy have been given were it not that the Canadian Association of Massage and Remedial Gymnastics made a grant, which, with the addition of a generous gift from an anonymous friend of this work, was sufficient to cover the deficit which otherwise would have been inevitable. At present there are four positions in Ontario that cannot be filled for lack of qualified physiotherapists. It is probable that both courses will be offered next year.

The Purchasing Agents' Association of Toronto asked for an evening class in the law of contract and in other phases of the work of the purchaser. This was arranged and fifty-five members of the association proved to be earnest students throughout the session. A club composed of business men asked for a series of lectures on the history of Greece and Rome and spent several profitable evenings in studying that subject.

There were 1802 men and women in Evening Tutorial Classes and the attendance was well sustained throughout the session. Classes offered were: five in English, four in conversational French, four in economics, four in psychology, four in public speaking, three in journalism, two in accounting, and one each in mathematics, advertising, appreciation of art, appreciation of music, astronomy, mercantile law, modern history, philosophy, and secretarial practice. To these classes forty-two unemployed were admitted without fee but only ten of them attended regularly until the close of the session. For these classes there are no entrance requirements and there are no examinations.

For nurses two short refresher courses were held, in co-operation with the School of Nursing, with a total enrolment of 122.

In Workers' Educational Association classes there were 1598 students, exclusive of some four hundred patients in the Mountain Sanatorium near Hamilton who, by means of ear-phones, listened to the lectures given once a week to the W.E.A. class in that institution. These patients could not, of course, hear or participate in the discussions. W.E.A. classes were held in Brantford, Galt, Hamilton, the Mountain Sanatorium, Kingston, Kitchener, London, New Toronto, Oakville, Peterborough, Preston, St. Catharines, Stratford, Toronto, Windsor, and Woodstock. Membership in these classes is open only to manual workers—trades unionists and those in similar occupations. Men and women who are unemployed are admitted without payment of fee. The importance of this work can scarcely be over-estimated. The Workers' Educational Association is one of the most important stabilising influences in the community.

The next piece of work to be undertaken by the Department of University Extension should be the education of farmers. These, especially the younger farmers, are anxious for a knowledge of economics and only the University can supply that demand.

The department employed during the year 183 instructors, of whom 38 were women. The total enrolment in continuous courses was 4797 of whom 2768 were men and 2029 were women.

The number of Extension Lectures given this year was 138. These were distributed as follows:

Acton, 2; Ayr, 2; Barrie, 2; Belleville, 2; Bowmanville, 2; Brantford, 1; Chatham, 4; Cobourg, 3; Dunnville, 3; Galt, 1; Guelph, 2; Hamilton, 12; Huntsville, 1; Kimberley, 1; Kitchener, 1; Lindsay, 1; London, 2; New Toronto, 1; Niagara Falls, 5; North Bay, 3; Orillia, 11; Oshawa, 1; Ottawa, 1; Stirling, 2; Stratford, 2; Timmins, 3; Toronto, 48; Waterdown, 1; Weston, 1; Whitby, 1; Woodstock, 1. Less favourable financial conditions in many local organisations tended to reduce the number of these lectures.

Those who delivered Extension Lectures this session were:

W. J. Dunlop, 39; K. H. Rogers, 14; Dr. J. D. M. Griffin, 12; Professor N. A. M. MacKenzie, 8; V. Lange, 7; Professor C. N. Cochrane, 5; Professor F. H. Underhill, 5; R. K. Arnold, 3; Professor H. M. Cassidy, 3; Mrs. J. Creighton, 3; J. Campbell-McInnes, 3; Dr. R. M. Saunders, 3; Professor H. J. Davis, 2; Professor E. Goggio, 2; Professor E. W. McInnis, 2; Professor F. H. Anderson, 1; Dr. F. L. Barber, 1; Professor A. Brady, 1; G. A. Cornish, 1; Sir Robert Falconer, 1; Dr. W. L. Holman, 1; Dr. H. A. Innis, 1; Professor G. E. Jackson, 1; C. W. Jefferys, 1; Mrs. M. M. Kirkwood, 1; Professor G. W. Knight, 1; Arthur Lismer, 1; Miss H. M. Latter, 1; Professor T. F. McIlwraith, 1; Miss Yvonne McKague, 1; Professor H. S. McKellar, 1; Dr. S. A. B. Mercer, 1; Dr. P. M. Millman, 1; Professor E. S. Moore, 1; J. F. Parkinson, 1; George Pepper, 1; A. F. W. Plumptre, 1; T. A. Reed, 1; Principal M. W. Wallace, 1; W. S. Wallace, 1.

(15) DEPARTMENT OF SOCIAL SCIENCE

(*Professor E. J. Urwick, Acting Director*)

The number of new students entering the department in 1933 was the same as in the previous year. The percentage of university graduates continues to increase, and is now a little over 60. While the majority of the students are from Ontario, the department continues to attract entrants from all parts of Canada, due doubtless to the fact that it is at present the only fully equipped department in the country for the preparation of social administrators and workers. It is, however, gratifying to note that a training centre in Montreal is now in process of re-formation.

Despite the grave difficulties which have recently beset both voluntary social agencies and official departments of welfare, owing to the continued effects of the depression, we have found on all sides an even greater willingness than before to help us in the practical training of our students. The administrators in the city have everywhere consented to undertake the supervision of field work, which counts for so much in the effective training for social work; and offers to provide openings for special students to serve as apprentices have come from other cities, including Montreal and Vancouver. The department owes a debt of gratitude to its friends in all parts of Canada; we owe a special debt to the Provincial Department of Health for making possible the training in Mental Hospitals of students who desire to equip themselves for social work in connection with psychiatric treatment.

The staff of the department has suffered a serious loss through the resignation of Professor H. M. Cassidy, who has been appointed to assist the Welfare Department of the Government of British Columbia in the organisation of the social services of the Province.

(16) REPORT OF THE DIRECTOR OF THE SCHOOL OF NURSING

(*Miss E. K. Russell*)

I beg to submit the first annual report of the School of Nursing.

In July 1933 the School took over the teaching-courses for nurses from the former Department of Public Health Nursing, and from the Department of University Extension. These consisted of courses for graduate nurses (one in preparation for public health nursing and the other in preparation for teaching and supervisory work in hospitals), and also a small bit of experimental work, a four year undergraduate course in public health nursing. To this work there was added, at the opening of the term last September, a new three-year undergraduate training in nursing. This last is to take the place of the former four-year course in public health nursing, which will be discontinued as soon as those now enrolled therein have completed their studies, no new admissions having been made since 1932.

We have in our School, in this new three-year course in nursing, an experiment which is attracting much attention, for a reason that is very simple but profoundly disturbing in its novelty, namely that the pupil in the School is here merely as a pupil. She is quite independent of the hospital, financially, as she is paying the cost both of her living and of tuition so her time belongs to herself and not to the hospital: hence this time of hers can be used wholly to study and to practice the art that she has come to acquire. Hitherto this situation has not obtained in schools for nurses.

This new freedom carries with it a new measure of responsibility for shaping a training-course that will meet the needs of the nurses who go from this School to give the community the service for which it is asking, namely, nursing care for the sick and nursing service for the well through the public health organisations. This is all new work—educational research—and the situation is as full of problems as it is of possibilities. The many conflicting claims will not be settled immediately, but it appears that good results should be forthcoming if we are prepared for patient and prolonged experimentation.

Meantime it is possible to report satisfactory progress at the end of this first year. The new work has been done with greater ease than had been thought possible and, further, more has been accomplished in this first year of training than we had hoped for at the outset. These results are evidence of the fact that the principles underlying the experimental work are acceptable to the nursing, medical and hospital authorities with whom we are working. We are glad to acknowledge the help which has been given, in generous measure, by the many with whom we have been associated, namely, the hospitals, the public health organisations and a number of the university departments. We are particularly indebted to the members of the staffs of the Faculty of Medicine and of the School of Hygiene, and also to the staff of the Toronto General Hospital, for an extremely generous attitude; without this support progress would have been much slower.

The following summary of the enrolment for the past year shows the variety and extent of the work that was awaiting the School: in fact, more is wanted than the small, newly appointed staff can undertake. There is no doubt about the demand for the work.

Undergraduates in 1st year of the new course in Nursing	9
Undergraduates in 4th year of the four-year course in Public Health Nursing	10

Graduate nurses in the certificate courses	31
Special students from foreign countries not enrolled in certificate courses	8
Occasional students, including undergraduates from Toronto hospitals	158
Students enrolled in refresher courses	128
Total	344

The special training for graduate nurses that was available in the past is being continued and developed. The new calendar for 1934-35 contains an outline of studies, which, it is hoped, will give a better preparation to the small group of nurses who are preparing to do teaching and supervisory work in hospitals and other schools for nurses.

The residence has been furnished and opened and the life of the students has been established there. If the hopes of the founders of the School are to be realised, the residence will play a large part in bringing this about. Considerable attention has been given to the graduates of past years to develop their interest in the School and the residence and the response from the graduates has been excellent.

(17) REPORT OF THE DEPARTMENT OF MILITARY STUDIES

(*Brig.-Gen. G. S. Cartwright, Director*)

I have the honour to submit a report on the work carried on by this Department during the academic year, 1933-34.

The enrolment for the Military Studies courses was as follows:—

I Year	10
II Year	13
III Year	10
IV Year	6

I was very pleased with the keenness shown by the students in all these years, both with regard to the standard of work and the regularity in attendance.

In addition to the above courses special classes were held to enable members of the C.O.T.C. to write the War Office examinations for O.T.C. Certificates, "A" and "B".

Special lectures were given in military geography, organisation and administration and military campaigns as well as in tactics and military science; special exercises were set in these subjects, with very satisfactory results.

This year there was a considerable increase in the number of candidates writing for the various Arms of the Service. The enrolment in these classes was as follows:

Certificate "A", Artillery	10	Certificate "A", Infantry	52
" "B", "	1	" "B", "	12
" "A", Artillery Survey	4	" "B", Machine Guns	2
" "B", " "	1	" "A", Medical	18
" "A", Engineers	14	" "B", "	1
" "A", Signals	16		

and of these, seventy-one actually entered for the examination. The results of this examination have not yet been received from England.

A student who graduates this year and holds O.T.C. "B" Artillery, certificate, has submitted an application to be considered for a commission in the British Army (R.A.S.C.); his case comes before the Military Committee and if his qualifications justify it a recommendation will be forwarded to Headquarters, M.D. 2.

I am greatly indebted to Lieut.-Col. F. Fraser Hunter, D.S.O. for his assistance throughout the year in giving lectures in tactics, military geography, campaigns, etc.; also, to Captain Watson, C.O.T.C., for his aid in taking up instruction in map reading in the early part of the session.

(18) REPORT OF THE UNIVERSITY HEALTH SERVICE (MEN)

(George D. Porter, M.B., Director)

I.

The report for the year shows that there have been

Examinations

First year students	928	
Second " "	714	
Senior " "	346	
		1988
Re-examined by specialists		16
Total		2004

Results

Those found fit for physical training	96 %
Those having some disability requiring corrective or light exercises	2.5%
Those unfit for physical training	1.5%

A noteworthy fact is that among the first and second year students only 22 are exempted from physical training owing to physical disability. This is the lowest number in over 10 years, and compares with 26 exempted last year, 39 in 1931, and 43 in 1930.

The average age of the first year students is 19 years; their average height 5 ft. 8¾ ins., and their average weight 141½ lbs. (slightly in excess of last year).

The following conditions accounted for unfitness for physical training:—

Cardiac trouble	4
Operations	4
Infantile paralysis	4
Asthma	2
Bronchitis	2
High blood pressure	1
Rheumatism	1
Kidney trouble	1
Osteomyelitis	1
Anaemia	1
Fistula	1

Improvement in the physical condition of second year students is shown in the majority of cases. Forty-four per cent. of those below A. 1 in their first year had their rating raised during the year, while only five per cent.—through illness or accident—had their category lowered.

Illness during the year: Apart from four cases of Scarlet fever and the perennial epidemic of Influenza, we have been very fortunate in our freedom from epidemics during the year.

The following are causes of absence from physical training classes for periods varying from one day to three months.

Colds	220	Neuritis	3
Influenza	33	Nephritis	2
Sore throat	19	Myositis	1
Tonsilitis	13	Syncope	2
Bronchitis	10	Diabetes	1
Pneumonia	2	Facial paralysis	1
Pleurisy	2	Septicaemia	1
Pharyngitis	1	Hemorrhoids	1
Laryngitis	1	Ptomaine poisoning	1
Sinusitis	9	Duodenal ulcer	1
Conjunctivitis	4	Goitre	1
Otitis media, etc	5	Appendicitis	7
Arthritis	2	Blood transfusions	1
Gastralgia	7	Local infections	20
Colitis	1	Vaccination	6

Inoculation		1
Trench mouth		1
Epistaxis		3
Frostbite		6
Quarantine		2
Mumps		2
Chicken pox		1
Scarlet fever		4
Skin diseases:		
Impetigo	1	
Eczema	2	
Furunculosis	20	
Scabies	2	
	—	25

Injuries:		
Fractures	7	
Dislocations	5	
Sprains	69	
Cuts	11	
Abrasions	13	
Burns	2	
Blisters	10	
	—	117
Operations		12
Total		552

One hundred and nineteen men were enrolled in the corrective classes under Mr. Don. Barton, for the correction of such defects as round shoulders, flat feet and spinal curvature. There were also 110 students enrolled in these classes for periods of from one to six weeks on account of injuries or disabilities which prevented their taking the regular physical training.

During the year the usual large number of students came in for the treatment of minor injuries received on the campus and in the gymnasium, and also for personal advice on health matters.

(18) REPORT OF MEDICAL ADVISER OF WOMEN

(*Dr. Edith Gordon*)

II.

The work of the Medical Office for this year has proceeded smoothly, and I trust effectively. Large numbers of women students have availed themselves of the opportunities for physical examinations, consultations upon health problems, and various tests that have been offered, as well as coming in for treatment of minor disabilities. The health of the women has been excellent upon the whole, and there was less illness in the residences and among the students living in the city than usual.

Physical Examinations: There have been 573 physical examinations made during the year. Of these, 181 were on entering women in University College, the Faculties of Medicine, Household Science, Architecture, and Dentistry, who are required to take the two hours weekly of physical training. The remaining 392 were upon women of other colleges and departments, including 192 from the College of Education and Library School. There were 41 re-examinations during the year upon students whose physical condition at the first examination was such that a check-up later was considered advisable. There were 236 special examinations upon students who participated in the sports of tennis, baseball, basketball, hockey and swimming. A small group of students come back yearly for a physical examination, and it is hoped that the custom will grow, as the women appreciate the value of an annual physical examination. The interest with which suggestions for the correction of poor health habits is met, is most encouraging, and the re-examinations through the year evidence the success that such attempts merit when intelligent effort is given to their removal.

It was impossible to place all students who required remedial exercises because of postural or other defects, in the corrective classes. The classroom equipped for that purpose is quite inadequate for the work, and only the most urgent cases could be cared for. A considerable number of students were exempted from physical training, but were required to report weekly to the Medical Office for a rest period or some substitute for the physical training. All students who were required to take physical training were thus under supervision of either the Department of Physical Training or the Medical Office.

Consultations: It is estimated that there were over two thousand calls upon the Medical Adviser for help in meeting health problems or for treatment of a minor character. Occasionally serious conditions were discovered in the medical office, but these were referred to the student's physician immediately. The students are urged to report slight symptoms immediately upon their appearance. In this way treatment can be instituted at once if it is necessary, and serious illness prevented. It is the aim of the Medical Adviser, however, to have the medical office recognised more and more as a place where advice can be had regarding daily hygienic problems of the students, and where a satisfactory program for successful living may be worked out with the student. It is through individual health education that she hopes to accomplish an improved health standard among the students.

In January, Tuberculin tests were made upon the entering students. It is hoped that from now on the Intercutaneous Tuberculin skin test may be a part of the regular physical examination, and that X-rays of the chest may be required of those showing positive skin reactions. In this way it is anticipated that incipient and early tuberculosis may be recognised. Vaccinations are performed on those who have not already had them, and 29 were performed during the past year. Shick and Dick tests have also been given upon request, and Toxoid given to a few students. Urinalyses have been made in a few cases. Laboratory work, of necessity, is extremely limited, though there are many times when one would like to do more in order to increase the information regarding a student's physical condition. Through the courtesy of Dr. M. Watson of the department of gynaecology, a considerable number of young women were able to avail themselves of certain treatment and supervision offered by this department. They also added to the numbers in a piece of research work that the department is carrying forward.

Lectures: Three health talks, based on the findings at the physical examinations were given the entering students. There was a very good attendance at these talks, and considerable interest was evinced. It is a matter of regret that there could not be more, but they were given in the hours 5 to 6 p.m., and through courtesy of the physical education department credit for attendance was given.

Four hours weekly in anatomy were given to the students in the second year of the course leading to a diploma in physical education; two hours weekly in personal hygiene and first aid and emergencies were given to the first year students of the same course, and one hour weekly in general hygiene to the fourth year of the same course. Four lectures in personal hygiene were given to the students in the course in public health nursing.

Rest Room: The cots in the rest room were used frequently both by the students who had been excused from the physical training requirement, and by others who appreciated the value of occasional rest periods as a means for increasing their efficiency. I am glad to have this accommodation to offer the students, particularly those who are in heavy courses, and those who live at long distances from the University.

Needs: The constant appeal for increased quarters for the physical training and sports activities of the women tells its own story of the urgent need there is for adequate floor space and proper dressing rooms. It is to be hoped that some means for supplying this outstanding want may be found in the near future.

Physical Examinations, 1933-1934:

University College (entering)	152
University College (others)	37
Victoria College	34
Trinity College	21
St. Michael's College	20
Household Science (entering)	14
Household Science (others)	9
Medicine (entering)	12

Medicine (others)	3
Architecture	1
Dentistry	2
Public Health Nursing	49
Ontario College of Education and Library School	192
Social Science	2
Physio-therapy	5
Graduate Students	16
Special and Occasional	4
Total	573

Number required to take Physical Training	181
A1 and A2 (physically fit to participate in physical training)	77%
B1 (requiring corrective gymnastics)	7%
B2 and C (unfit to participate in physical training)	16%

(18) REPORT ON ATHLETICS AND PHYSICAL TRAINING

(*T. A. Reed, Secretary, Athletic Association*)

III.

Compulsory Physical Training

The valuable work done under this heading shows a distinct advance over that of previous sessions. Particularly in the practical application of Danish fundamental gymnastics has this been the case and the varied movements have increased the interest in the work.

Of the 1576 male students enrolled over 400 were allowed to take this training in competitive sports during the seasonal period of each particular activity, while 224 preferred the military training of the Canadian Officers' Training Corps.

Men students enrolled in the first and second years amounted to		1872
From third and fourth years (being deficient in previous years)		10
From Wycliffe College		6
		1888
From this total must be deducted those		
(*a*) With credit for two years physical training but repeating academic work	257	
(*b*) Exempted on medical grounds	33	
(*c*) Withdrawn from college during the session	22	
		312
		1576

These 1576 elected to take their Physical Training as follows:

In Physical Training classes	1048
In the Canadian Officers' Training Corps	224
In the corrective classes	119
In the following Intercollegiate & Interfaculty sports (part time):	
Rugby Football	163
Soccer Football	44
Track	34
Harrier	3
English Rugby	9
Basketball	112
Hockey	117
Indoor Baseball	99
Boxing, Wrestling & Fencing	81
Swimming and Water Polo	63
Gymnastics	23
Lacrosse	40
Volley Ball	58
(Failed to register in Physical Training)	18
	2255
Less those in two or more activities	679
	1576

General Physical Training: Under this heading are included all the supervised activities under the direction of Mr. Donald M. Barton and his efficient staff, Messrs. Martin, McCutcheon and Winterburn. The compulsory physical training classes referred to in the first paragraph required 25 weekly periods, or 574 classes during the term, and the corrective classes for men not physically fit 20 each week, or 418 in all. This corrective work is of the utmost value and is under the direct supervision of Mr. Barton, a recognised authority on remedial gymnastics.

Class	Enrolled	Teams	Weekly Periods	Total
Physical Training			25	574
Corrective	229		20	418
Boxing	60	3	7	105
Wrestling	71	3	7	119
Fencing	65	2	5	109
Gymnastics	41	3	3	70
Athletics	55	2	2	49
Basketball	276	21	45	890
Indoor Baseball	257	16	20	275
Lacrosse	118	11	20	120
Volley Ball	176	15	22	170
Learn to swim	146		12	244
Life Saving	342		19	410
Water Polo:				
Interfaculty	120	9	18	144
Intercollegiate	25	2	3	30
Swimming:				
Interfaculty	89	7	12	84
Intercollegiate	24	3	3	45

There were 136 students taught to swim and 191 obtained the awards of the Royal Life Saving Society for proficiency in life saving.

Intercollegiate Athletics: The outstanding features in Senior Intercollegiate competition were the winning of the Yates Cup in Senior Rugby and the Colonel Tom Gibson Memorial Cup in Boxing, Wrestling & Fencing, the former necessitating a play-off with Queen's in very wintry weather. The unexpected good showing of our boxers under Dr. L. Black's instruction and the wrestlers under Mr. Chilcott and Mr. Martin wrested victory from what looked like inevitable defeat. We also won the Jimmie Douglas Cup in Junior Intercollegiate Rugby, the Senior Soccer, the English Rugby (for the first time since 1926) the Rowing and the Gymnastic Competition. Special mention must be made of the splendid coaching of two of our graduates, Professor T. Loudon in Rowing and Alan Keith, U.C. '10 in Gymnastics.

There were 22 teams in various sports representing the University of Toronto, *i.e.* 283 contestants who wore our colours in competition with sister institutions. Our Hockey Team made its annual visit to the United States and won its games against Harvard, Yale and Princeton. The Princeton Hockey Club visited us in December and demonstrated their ability by defeating us on our own ice.

Interfaculty Athletics: Again intermural sports showed an increase in interest as well as in the numbers engaged. The famous Mulock Cup, donated by our Venerable Chancellor forty years ago for Rugby and since competed for annually, was won by Senior School, after two hard fought games with Victoria. The fact that it brought out eleven teams embracing 289 players is but an indication of the value of these contests where players who have not the ability to make one of the university teams can still find an outlet in healthy exercise and determined competition. We owe much to the generous donors of these trophies.

Series	Name of Cup	Winner	Inter-faculty Teams	Players
Rugby	Sir Wm. Mulock	Sr. S.P.S.	11	289
Track	W. L. Rowell Memorial	S.P.S.		63
Soccer	Arts Faculty	Knox	9	135
Harrier	J. Brotherton	Wycliffe		67
Hockey	W. T. Jennings	Victoria	14	209
Basketball	Clifford Sifton	Jr. Meds	15	181
Lacrosse	Dr. W. A. Dafoe	Knox	11	121
Boxing, Wrest. & Fencing	Francis Davidson	O.A.C.		66
Indoor Baseball	A. G. Spalding & Co.	Dents	15	208
Swimming	A. M. Fitzgerald	Trinity	7	61
Water Polo	H. P. Eckardt	Trinity	9	96
Tennis	F. Y. McEachren	W. Piggott U.C. II		75
Gymnastics	H. A. Wilson	Meds		11
Indoor Track	Tor. Cricket Club	S.P.S.		26
Volley Ball	Victoria Staff	Jr. Vic.	15	161
			106	1769
Less those in two or more activities				782
Number of contestants				987

During the session the Athletic Directorate granted the use of the gymnasium and swimming pool for the various official dances and at-homes which are held during the academic year, as well as for the graduates annual New Year's ball. We also granted the use of the gymnasium for the fourth interscholastic gymnastic competition held under the direction of the Ontario Athletic Commission, and to St. Andrew's College for a display of their gymnastic work before a large audience.

A sad occurrence and one that cast a shadow over the whole University last November was the tragic and untimely death of John H. C. Copp, one of the most popular and beloved of the undergraduate body. Prominent in football from his freshman year and in executive work for his faculty (medicine), an able musician, and active in work among boys in his church, his loss as a sportsman, a student and a gentleman is irreparable. His funeral from Convocation Hall which was crowded to the doors was a fitting testimony to the esteem in which he was held. The annual Athletic At-Home was cancelled in consequence.

The Athletic Directorate: The Athletic Directorate for 1933-34 consisted of Dr. J. A. McCollum (President), Professor M. A. Mackenzie, Professor J. F. Macdonald, Dr. W. Easson Brown, Messrs. J. D. McLennan (Vice-President), G. A. Hendry, K. W. Peacock, L. W. Skey, S. H. S. Hughes, J. R. Scott, and *ex-officio*, Dr. G. D. Porter, Medical Director, Warren Stevens, Athletic Director and T. A. Reed, Financial Secretary.

(18) REPORT OF PHYSICAL EDUCATION FOR WOMEN STUDENTS

(*Miss I. G. Coventry, Director of Physical Education*)

IV.

During the session 1933-34 there were 195 students enrolled in the physical education classes and approximately 864 class periods of instruction were given by the physical director and her assistant, Miss J. M. Forster.

Required Physical Training: The required physical training class with an enrolment of 175 students was subdivided into 17 class periods a week. All the students who attended the two class periods a week tried the final examinations in general gymnastics and corrective exercises.

Students from University College	155
" " Faculty of Medicine	13
" " " " Applied Science	2
" " " " Household Science	9

Corrective and Remedial Classes: Class periods of corrective and remedial gymnastics were given to students who were medically advised to take the special course arranged for their welfare. This essential part of physical training was under the personal supervision of the physical director. Marked improvement was noted and reported at the end of the session.

Diploma in Physical Education—Four Year Course: There were 16 students registered in the four year course in physical education and approximately 694 periods of instruction were given of which 442 were practice and 252 were theory.

The decrease in the number of students attending this course was partly due to the revision of the course which required a higher standard of scholarship necessitating additional hours of attendance at classes.

The women graduates who have been granted diplomas in physical education by the University of Toronto are in constant demand as full time physical directors in collegiates, technical and high schools of Toronto and other cities of Ontario.

Students in first year	7
" " second "	2
" " third "	3
" " fourth "	4

Swimming: There were 313 students from all colleges, faculties and departments and approximately 482 periods of instruction given by the instructor, Mr. A. L. Cochrane and his assistant, Miss A. Cochrane, during the session of seven months.

Students from University College	153
" " Trinity "	18
" " St. Michael's "	9
" " Victoria "	66
" " Faculty of Medicine	20
" " " " Household Science	6
Administrative Staff	19
Graduate Studies	2
School of Nursing	20

(18) REPORT ON ATHLETICS FOR WOMEN

(Miss A. E. M. Parkes)

V.

The Women's Athletic Association has this year fostered and directed practice and competition amongst the undergraduate women in basketball, hockey, tennis, swimming, indoor baseball and badminton. Interfaculty series were conducted in all sports and, in the first three named, an intercollegiate series as well. In several colleges interyear games in basketball and hockey were played and faculty tennis and badminton tournaments and a faculty swimming meet were organised. It is gratifying to note that in its first year of organisation, the School of Nursing put teams in the basketball and badminton series and made a very creditable showing.

In 1933-34 the intercollegiate championships were divided as follows: Tennis, Queen's University; Basketball, University of Toronto; Hockey, University of Toronto. The interfaculty record is as follows:

Series	Cup	Winner	Competitors
Tennis	Curlette Cup	St. Michael's	30 (5 teams)
Basketball	St. Hilda's Cup	St. Hilda's	110 (9 teams)
Baseball	Univ. College Cup	Victoria	35 (3 teams)
Hockey	Harston Cup	Victoria I	75 (6 teams)
Swimming	Interfaculty Cup	Univ. College	30 (6 teams)
Badminton		Univ. College	30 (6 teams)

With the co-operation of the Superintendent's Office, the women undergraduates once more operated three parking stations during the fall football games and were thus able to finance the activities of the association. The men's athletic association again most generously permitted the use of the Arena by the intercollegiate hockey team and made available the Hart House gymnasium for the interfaculty basketball finals and the pool for the swimming meet.

Much credit is due to the undergraduate executives of the various athletic clubs. The excellent organising ability, common sense and good sportsmanship displayed have been noteworthy. Mention should also be made of the great contribution made by the various graduate and undergraduate coaches who generously gave of their time to coach both intercollegiate and interfaculty basketball, hockey and baseball teams.

(19) REPORT OF THE WARDEN OF HART HOUSE

(*J. B. Bickersteth, Esq., M.C., M.A.*)

General.—The past year saw a considerable reduction in the undergraduate membership of Hart House owing to the smaller registration in the university. The undergraduate members numbered three thousand seven hundred and fifty-two and the senior members (faculty and graduate) numbered six hundred and seventy-seven. The total membership was thus four thousand four hundred and twenty-nine. The decrease in the revenue of Hart House which is dependent on fees for the larger part of its income was consequently great. It was also inevitable that the financial straits of the undergraduates should affect the attendance in the Great Hall as many students had not enough money even to avail themselves of the reasonably priced meals served there. Throughout the winter the Hall Committee did everything possible to help members in these difficult days and it is satisfactory to report that during the last few months of the academic year the attendance began to rise and remained considerably higher than it had been for the similar period last year. Hard times also resulted in a smaller attendance at the Hart House fancy dress ball and at some of the functions arranged by the colleges and faculties, though here too during the last few months of the year there has been considerable improvement. In September the British Commonwealth Relations Conference was held at Hart House. This was a comparatively small and entirely unofficial gathering, but one of undoubted significance. It was arranged by the Canadian Institute of International Affairs and about fifty delegates were present drawn from Great Britain, Canada, Australia, New Zealand, South Africa and India. The English group was headed by Lord Cecil, Sir Herbert Samuel, Mr. (now Sir) Donald Somervell and Mr. Philip Noel Baker, and leading public men represented the Dominions and India. The meetings took place in the debates room and the music room and on 11th September an official dinner was held in the Great Hall at which Lord Cecil was the chief speaker. During the Armistice week-end a number of functions were held in Hart House in connection with the special Graduate Reunion. The Warden's Christmas dinner took place in the Great Hall and as on previous occasions was attended by over one hundred men representing the Dominion from coast to coast and most of the leading countries of the world.

Music.—This year for the first time the complete series of Friday Afternoon Recitals covering the period from October to the end of February was arranged in the previous May. This made it possible to work out a plan which had some continuity in it and by giving them long notice was instrumental in securing some of the leading musicians in Toronto. Among those who appeared were Viggo Kihl, Ernest Seitz and Alberto Guerrero and an innovation which proved very successful was the inclusion of two undergraduate members in the list of artists. The first two recitals were given by Dr. Ernest MacMillan and Dr.

Healey Willan dealing respectively with "The Architecture of Music" and "Plain-Song". These were followed by programmes of the works of Bach, Mozart, Beethoven, Schubert, Schumann, Chopin and Brahms and then a series of national programmes. One of the outstanding events this year was the formation of a Glee Club with Allan B. Sly as conductor. The club which consisted of about twenty-four members of Hart House held rehearsals throughout the winter and gave the last Friday Recital before a large audience of students. The interest shown by the members of the club and the excellence of the programme hold great promise for the future. The Hart House String Quartet gave the first Sunday Evening Concert in October, the artists responsible for the rest of the series being Reginald Stewart, Scott Malcolm and Reginald Godden, J. Campbell McInnes and Leo Smith, Wilma Stevenson and George Lambert, Jeanne Dusseau, Frances and Harry Adaskin, and the Conservatory String Quartet. The Songsters again proved popular and were conducted by J. Campbell McInnes. These and the Sing Songs under Ross Workman are unquestionably exercising a wide influence on the undergraduates in teaching them to appreciate the best of folk-music. After an interval of two years Dr. MacMillan once more produced Bach's St. Matthew Passion in Convocation Hall on the Wednesday in Holy Week and the Music Committee assisted in the management of the performance.

Art.—The number of applications which the Sketch Committee now receive from artists who desire to hold exhibitions in the sketch room proves that they realise the growing interest of undergraduates in art. The committee do their best to enable artists of different schools of thought to exhibit their work and this year exhibitions were held by Gordon Webber; John Russell; Goodridge Roberts; Kathleen Daly and George Pepper; Will Ogilvie; Isobel McLaughlin, Prudence Heward and Sarah Robertson; the Canadian Society of Graphic Art; and (in October) by a group of some forty Toronto artists. Medici prints lent by the National Gallery at Ottawa and woodcuts by Eric Gill were also shown. The annual exhibition of photography arranged by the Camera Committee produced many outstanding prints and some of the best were selected by the committee and presented to Hart House to form the beginnings of a permanent collection. A large number of paintings and drawings which were of a higher standard than in any previous year were shown at the exhibitions in February and March by undergraduates and by senior members respectively. The usual monthly exhibitions of coloured reproductions were arranged in the print room by W. E. Carswell and a sub-committee and were visited by many undergraduates who took this opportunity of gaining some knowledge of the work of the great masters. Shortly before Christmas there was a special exhibition of caricatures of well-known personalities at Geneva and elsewhere by Edmond X. Kapp procured through the kindness of Dr. J. G. FitzGerald. This year for the first time those artists who were able to accept the invitation discussed painting (with special reference to their own pictures) at informal meetings in the sketch room when the attendance of members was most encouraging. H. Reid MacCallum, a member of the Sketch Committee, gave a series of informal addresses on the principles of art during the Christmas term and in the New Year Lawren Harris, Arthur Lismer and F. H. Brigden gave a series on Canadian artists. The usual course of art classes was arranged under Herbert S. Palmer with an average attendance of twenty to thirty members. Several paintings by Canadian artists have been added to the permanent collection of Hart House during the past year the outstanding picture being "October Shower Gleam" by the late J. E. H. MacDonald. Reference was made last year to the need for an arts and crafts room. After exploring every possible corner of Hart House the committee decided to use a somewhat limited but more or less adequate space adjoining the photographic dark rooms. Owing to the generosity of the Massey Foundation it will prove possible to instal the necessary equipment before the new academic year opens and it is known that there is a group of members who intend to take advantage of this opportunity of practising etching, carving, modelling and other of the crafts.

Debates.—The debate held on 21st February marked the opening of the second decade of Hart House debates and was distinguished by the presence of the Prime Minister of Canada as Hon. Visitor. The debates room and the gallery were filled to overflowing and many undergraduates were unable to find a place. Professor G. E. Jackson, the Speaker on the occasion of the first debate in January 1924, reminded the House that almost all the university men who now occupied positions on either front bench in the House of Commons in London had gained their first experience of parliamentary discussion in the great debating societies of the British universities and expressed the hope that as the years passed the same tradition might be true of Canada. Private business being over the House proceeded to discuss the resolution "That in the opinion of this House it is in the best interests of Canada to retain her present preferred position in Empire markets". After the two speakers "on the paper" had finished their speeches eight other members succeeded in catching the Speaker's eye and addressed the House. The standard of speaking was excellent and the debate was followed with keen attention and punctuated by constant cheering and counter-cheering. The Speaker then called on the Rt. Hon. Member for West Calgary to address the House and Mr. Bennett wound up the debate in a fifty-five minute speech which was a masterly presentation of the case for the Ottawa agreements. The result of the voting was a majority of one hundred and twenty-one for the resolution (311-190). Mr. J. S. Woodsworth was present as Hon. Visitor at the November debate the resolution being "That this House sees no acceptable alternative to the two older political parties in Canada". At other debates during the year dictatorships, Ireland and the League of Nations were discussed.

Student Christian Movement.—The work done by the Student Christian Movement develops steadily. After a very successful and largely attended conference at Lake Couchiching the year's programme began and proved to be one of great variety and value. During November a series of five addresses with the general subject of "Our World Today" was given in Hart House with an average attendance of one hundred. Early in December at the request of the men themselves a one-day retreat was held in Deer Park United Church with an attendance of thirty. Monthly celebrations of Holy Communion took place in Hart House Chapel. In Advent a series of addresses was given in Hart House Chapel by Professor T. W. Isherwood and during Holy Week a further series was given by Professor W. C. de Pauley. During the Christmas vacation an extremely interesting Canadian-American conference was held in McMaster University at which Christianity and its relation to unemployment, race and nationalism were discussed and during a week-end in January the same subjects were dealt with by the students of this university under the leadership of Dr. Walter Kotschnig. Approximately thirty study groups were organised with four hundred men enrolled and met regularly throughout the year. During the winter months a number of men undertook various kinds of work in connection with the University Settlement, St. Christopher's House and the hostels for unemployed men and clothing was collected throughout the university and distributed by the Neighborhood Workers Association. A number of special speakers addressed meetings throughout the year among whom were the Rev. William Paton, the Rev. James Parkes, Dr. John Mott, Archdeacon (now Bishop) Fleming of the Arctic, Professor G. Vlastos, Dr. John Mackay, Dr. Stanley Jones and Mr. Philip Noel Baker. It is satisfactory to report that all this work will continue to be carried on under the direction of the Rev. L. A. Dixon who has been reappointed as Padre for a further three years.

Theatre.—A number of interesting plays have been produced in Hart House during the past year. Hart House presented "Arms and the Man" and also a Christmas play. St. Michael's College after an interval of several years returned to the theatre with "The Marriage of St. Francis". The Trinity College Dramatic Society produced "See Naples and Die". The Victoria College Music Club presented "Merrie England" and the Dramatic Club of the same college "The Goose Hangs High". Martha Allen with a group from the Repertory Theatre at Montreal appeared in "Hedda Gabler". Professor G. Wilson Knight produced "Hamlet" and the Shakespeare Society "Henry the Eighth". A number of children's plays were given and the University College Alumnae, the French Club, the medical students and the dental students all used the theatre for their productions. At the end of March the various groups in the Toronto District presented their respective plays in Hart House Theatre in connection with the Dominion Drama Festival and the play entitled "Michael" produced by Mr. Edgar Stone, Director of Hart House Theatre, won the regional competition "Michael" was subsequently the winning production in the finals of the Dominion Drama Festival held at Ottawa in April. Mr. Stone, after five years as Director of Hart House Theatre, is giving up his position to undertake other work and Mr. Melville Keay has been appointed Manager of the theatre by the Syndics.

Visitors.—The British Commonwealth Relations Conference brought many outstanding persons to Hart House among whom, in addition to those already mentioned, were Professor A. H. Charteris (Sydney University), Professor Ernest Scott (Melbourne University), Diwan B. H. Mudaliar (Madras), Mohammad Zafrulla Khan (Lahore), Mir Maqbool Mahmood (Patiala), Sir Laurie Hammond (formerly Governor of Assam), the Hon. W. Downie Stewart (New Zealand), the Rt. Hon. F. S. Malan (acting Prime Minister of South Africa 1918-1919), Dr. A. L. Geyer (Editor of "Die Burger", Capetown), Colonel C. F. Stallard (Johannesburg), Professor Arnold Toynbee, Sir John Power and Professor A. E. Zimmern. Other visitors during the year have included Sir Robert Garran (Solicitor-General of Australia), Count M. Soyeshima (Tokio), Signor L. Petrucci (Consul-General for Italy), Mr. Arundell Esdaile (British Museum), Dr. Wilson Cash (well-known missionary), Dr. Max Mason (President of the Rockefeller Foundation), Sir John Hewett (formerly Governor of the United Provinces), Signor Vittorio Podrecca, Don Mario Colonna, Mr. Christopher Morley, Professor D. B. Copland (Melbourne), Mr. Rockwell Kent, Mr. Raymond Massey, Mr. Bruce Lockhart, Mr. Maurice Schwartz (Jewish actor), Dr. Albert Mansbridge, Professor Manley Hudson (international lawyer), Air-Commodore P. F. M. Fellowes (Everest Air Expedition), Dr. F. D. Buchman (Group Movement), Sir Stafford Cripps, Sir Arthur Eddington, Dr. Stanley Davidson (Aberdeen), M. René Türck (Consul-General for France) and the Bishop of Madras.

Staff and Committees.—During the first days of the fall term Hart House suffered a severe blow by losing the services of Mr. D. L. Emond who was obliged to go into hospital for a prolonged period. Mr. Emond who has been a valued member of the staff for seven years is making excellent progress and before long will be back in his former position. Mr. J. R. Johnston was able to rejoin the staff temporarily in Mr. Emond's absence and it was a great satisfaction to have his help during the past winter. Hart House has not yet outgrown its experimental stage nor is likely to do so for some years to come and it is therefore of paramount importance that its varied and active life should be centred round those things which are concerned with a truly liberal education in the widest sense of the word, namely, religion, music, art, public affairs, the drama and "sports and games and the mastery of the body". If a hopeful beginning has been made in this respect it is the result of the deep interest which the committees of Hart House take in its welfare. Senior and undergraduate members alike are not only regular in attendance at meetings but are always ready to undertake every new task which confronts them. This year the Billiard Committee has been discontinued. Owing to the efficient work of this committee in past years the billiard room and its affairs are in such good state that there is little but routine business to attend to and it was agreed by all concerned that in future the billiard room might well come under the control of the House Committee.

This new arrangement will be in force next year. To the chairman, Mr. C. R. Myers, and the graduate member, Mr. C. A. Farewell, both of whom have served for many years on this committee, and to its undergraduate members Hart House is deeply grateful. Other faculty members who this spring sever their connection with Hart House committees after years of invaluable work are Mr. C. F. Morrison, Professor L. C. A. Hodgins, Professor H. R. Kemp and Professor G. W. Brown. A debt difficult to repay is owed to them for the generous way in which they have put their experience and leisure at the disposal of Hart House.

(20) REPORT OF THE DIRECTOR OF THE CONNAUGHT LABORATORIES

(*J. G. FitzGerald, M.D., LL.D.*)

This is the twentieth annual report of the Director of the Connaught Laboratories, and is a condensed survey of the activities of the laboratories for the year ending June 30, 1934.

The period under review has been most satisfactory. Both the University and Farm sections of these laboratories have witnessed greater activity than in any previous year. Research, investigation, and the production of biological products have been prosecuted with vigor.

The primary function of the Connaught Laboratories is to provide facilities and opportunities for the conduct of research in preventive medicine. This field of inquiry has constantly widened with the passing of the years. Physiology and biochemistry as well as bacteriology, epidemiology and immunology are the branches of medical science which are expected to contribute substantially in the future development of preventive medicine. It is necessary, therefore, to have well trained personnel and suitable facilities and resources for research in these subjects. Furthermore, physics, chemistry, and experimental biology or general physiology cannot be neglected, since new knowledge gained therein is frequently the key which opens vistas of profound interest and importance to our understanding of disease and its prevention. Much has been gained by the clear realisation that the bacteriologist, physiologist, biochemist, physical chemist, epidemiologist, statistician and experimental biologist when organised as a co-ordinated group of investigators, with ample freedom and substantial support, achieve results which working as individuals they would almost certainly not accomplish. This the Connaught Laboratories attempt through the men and women who staff them.

The University Section intimately associated with the various units in the School of Hygiene and in close working relationship with all other scientific departments of the University, and finally possessing the unique facilities of the Farm Section, should contribute in no small measure to human welfare and the promotion of knowledge. No other university in the world has as a part of it a division similar to the Connaught Laboratories, in structure and function. For several years after the opening of the Farm Section, circumstances were such as to restrict greatly its opportunities for research. This condition of affairs no longer obtains and the scientific staff at the University Farm is active and energetic in the conduct of many investigations. Integration of activities in the two sections, increased personnel, improved laboratory and library facilities, have all contributed to this achievement.

The Connaught Laboratories have begun to reap some of the benefits which flow from efforts to advance preventive medicine. For ten years past, constant and thorough-going attention has been directed to the problem of diphtheria mortality and morbidity. Studies have been carried on, practical measures based upon the results obtained have been advocated, and, in co-operation with official health agencies in all parts of Canada, the offensive against diphtheria has been greatly augmented. With what results? Fewer diphtheria deaths and cases in all Canada than ever before in the history of the Dominion. And for the first time in twenty years the routine production of diphtheria antitoxin in the Connaught Laboratories was not carried on during the winter of 1933-34. This antitoxin still has a place of supreme importance in the treatment of diphtheria, but occasions when its administration is indicated will but serve to emphasise the advantages of prevention. From the standpoints of sound sense, economics, and human happiness, diphtheria prevention is better than treatment. Diphtheria toxoid is the prophylactic presently recommended, and it is proving to be a magic wand in the hands of physicians and health officers alike.

With fine energy and determination, several workers in these laboratories are pursuing the ideals of improved methods of production, purification, and use of diphtheria toxoid. Professor Moloney, Dr. E. M. Taylor, Dr. Donald Cameron, and Mr. M. D. Orr have all participated in these undertakings with gratifying results. Professor Moloney and Mr. Orr have originated a method of purification of toxoid which has the great merit of novelty, simplicity, and wide field of usefulness, as well as affording regularity in results obtained. Dr. Taylor and Dr. Cameron have independently produced diphtheria toxoid of a potency greatly exceeding that previously available. Miss Smith, under Dr. Moloney's direction, has explored further the mechanism of the detoxifying action on diphtheria toxin of substances obtained from ox-bile. These and other investigations in the field of immuno-chemistry are of the highest interest and of real importance. Dr. Cameron's work, to which inadequate reference is made above, was carried on in the Farm Section of the laboratories. The essentials of an ideal prophylactic against diphtheria are innocuity, high antigenicity and stability. It should furthermore be effective in almost all individuals to whom it is given; produce a durable immunity and contain but a trace of inactive, extraneous nitrogenous material. Workers in the Connaught Laboratories have that goal as one of their objectives.

Doctor Defries and his colleagues in the field of viruses continue to make advances. Dr. Defries has explored the pathogenicity and virulence of a strain of rabies virus in white mice. Dr. Craigie and Dr. Wishart have continued the studies previously commented upon, namely the serological reactions of vaccinia virus. Dr. Craigie's work with the elementary bodies of vaccinia continues to claim much of his attention. Dr. McKinnon, despite the extensive and insistent demands upon time and energy occasioned by his duties at the Farm Section, has continued to interest himself in the problem of anterior poliomyelitis, many features of which still urgently require investigation. These laboratories now possess facilities for work in the viruses which leave little to be desired. They are so important, so varied, and present such peculiar difficulties in their investigation that several years are required for the training and organisation of personnel to deal with them.

Dr. D. T. Fraser and his associates, Dr. M. H. Brown, Dr. F. Fraser, Dr. C. E. Dolman, Miss Plummer, Dr. N. Silverthorne, Dr. Gibbons and those collaborating with them, have in the fields of bacteriology and immunology made splendid progress. With Dr. Mader and Miss Halpern, Dr. Fraser has continued his fundamental investigations in diphtheria immunity. He has organised and directed many other undertakings, both in the laboratories and elsewhere, relating to diphtheria, scarlet fever, whooping cough, and other acute infections. Dr. Frieda Fraser and Miss Plummer have carried on their studies of hemolytic streptococci, of scarlatinal and other origins. Miss Plummer has completed a comprehensive experimental and statistical study of scarlet fever antitoxin in rabbits. Dr. D. T. Fraser and Dr. Frieda Fraser have prepared an important memorandum dealing with hemolytic streptococci, scarlet fever toxin and antitoxin, etc., for the Permanent Committee of the Office Internationale d'Hygiène Publique in Paris. This will appear shortly in the monthly Bulletin of the Office. Dr. Brown and Miss Anderson, in their further study of pneumococci, have obtained interesting and valuable results. Dr. Brown, with Dr. Waters, has been investigating the polysaccharides of the pneumococcus. Pneumonia still continues to be a major public health problem. The fundamental facts relating to pneumococcus antigen and antibody have, in the main, still to be elicited. A satisfactory method of specific prevention has not yet been developed.

Dr. Dolman's work with the exotoxin of various strains of hemolytic staphylococci, with staphylococcus toxoid and with staphylococcus antitoxin, has continued to excite wide interest. The practical value of staphylococcus toxoid in localised staphylococcal infections has been well established by many physicians in various parts of Canada. The technical difficulties which have had to be overcome before a satisfactory toxoid could be prepared reflect great credit on Dr. Dolman, and have been the explanation of failure upon the part of certain other workers in their attempts to prepare potent staphylococcus exotoxin and toxoid. Most satisfactory results, recently reported, have been obtained in the use of staphylococcus antitoxin in suitable cases. The Connaught Laboratories gratefully acknowledge a debt of gratitude to those who, in Montreal, Toronto, Winnipeg, Vancouver, and elsewhere, have collaborated in an extensive clinical study of this new therapeutic serum. Standards for staphylococcus toxoid and antitoxin will, it is hoped, be set up in the near future. This question is receiving the attention of Dr. D. T. Fraser and Dr. Dolman. Dr. N. Silverthorne has obtained some exceedingly interesting and satisfactory results in his whooping-cough investigations. He has also made what appears to be an original and valuable addition to knowledge of meningococcus immunity and to the bacteriology of the micro-organism itself in relation to its antigenic nature.

Dr. Best, Dr. Scott, Dr. McHenry, Dr. MacLean, Dr. Partridge and those associated with them have been active during the year in the investigation of many physiological and biochemical problems. Insulin, oestrin (with the collaboration of Dr. Marrian), and other hormones have, both on the side of their chemistry as well as of their physiological activities, been explored with interest and with gratifying results in the accretion of new data. Dr. Scott's work now in press, dealing with so-called crystalline Insulin is a contribution of great importance. He has found that the formation of crystals from amorphous Insulin powder can only be effected in the presence of traces of certain metals such as nickel, cobalt, cadmium, and zinc. At present the experimental results indicate that "Crystalline Insulin" is a metallic salt of Insulin. Dr. Best and his collaborators have made still further important contributions to knowledge of fat metabolism. Dr. McHenry has collaborated with Dr. Dolman, Dr. Brown and others working on the bacteriological side, in the preparation of various antigens.

As regards studies made possible by Connaught Laboratories' grants for research in the School of Hygiene, Dr. Cunningham and Dr. Barrett have obtained exact data on the degree of atmospheric pollution in and about Toronto which should furnish the basis for efforts to abate smoke and other similar nuisances. Dr. MacLean and Dr. Partridge have published the results of their study of the comfort-zone in school children under controlled environmental conditions. Dr. MacLean has again been responsible for the examinations of members of the staff in the assessment of physical fitness. This most useful and informative undertaking has been carried on now for seven years. Dr. Sellers has co-operated in a statistical study of causes of puerperal deaths in Manitoba and Ontario; and Dr. Mary Ross has continued her survey of mortality from various communicable diseases in Ontario during the past fifty years. Evaluation of diphtheria toxoid, as determined by statistical methods, first undertaken four years ago, has been continued with most gratifying results.

Dr. Neil McKinnon has been made resident Assistant Director in charge of the Farm Section. With Dr. Kerslake, he has engaged in various studies in several fields. Dr. Cameron has assembled a great mass of valuable data on diphtheria-toxoid production. Various factors concerned have been carefully analysed. Dr. Sneath has published the results of his studies of tetanus toxoid.

The Comptroller's office staff, Mr. Hutchison, Mr. Boyd, Mr. Allen, Miss Finegan (at the Farm), and those assisting them, have had an exceedingly busy year. The volume of work has been greater than ever before. The collaboration of the administrative officers and Comptroller's staff has been greatly facilitated by the co-operative interest of the Comptroller and his colleagues. The sphere of influence of the laboratories on the side of distribution of products is constantly expanding. For this evidence of appreciation of their efforts, those responsible are most grateful. The place of the Connaught Laboratories as an institution of service is more than national in scope and must in the future, as in the past, be constantly in the forefront of the struggle against preventable diseases. Embracing every opportunity which presents itself of assuming new responsibilities and discharging them with satisfaction is the desire of every member of the staff.

The list of publications of members of the staff of the Connaught Laboratories appears in the report (13) in this volume. The library service, for which Miss Somerville and Miss Pickler are responsible, has, as in the past, been excellent. Current journals, bound volumes of periodicals in bacteriology, immunology, parasitology, preventive medicine, vital statistics, chemistry in relation to hygiene, physiology, biochemistry, general medicine and cognate subjects are available for the use of the staff of these laboratories; of the School of Hygiene, Faculty of Medicine, and graduates and undergraduates in the University.

The volume of production and distribution of biological products has exceeded that in any previous year. The products distributed include: diphtheria antitoxin, tetanus antitoxin, scarlet fever antitoxin, perfringens (gas gangrene) antitoxin, anti-meningococcus serum, concentrated anti-pneumococcus sera, normal horse serum, diphtheria toxoid, staphylococcus toxoid, tetanus toxoid, Schick-Test outfits, scarlet fever toxin, pertussis vaccine, smallpox vaccine, typhoid vaccines, rabies vaccine, tuberculin, heparin, liver extract and Insulin.

These products have been distributed during the year throughout Canada and in Bermuda, British Guiana, British Honduras, British West Indies (Barbados, Dominica, Jamaica, St. Christopher-Nevis, St. Vincent, Trinidad), China, Colombia, England, Irish Free State, Japan, Korea, Newfoundland, Roumania and South Africa.

The staff of the Connaught Laboratories now numbers 165. Visitors whom we have been happy to welcome have come to us during the year from: Africa (West), Australia, China, Denmark, England, Federated Malay States, France, Germany, India, Japan, Java, Jugoslavia, Newfoundland, Scotland, Siam and Syria, as well as from numerous centres in the U.S.A. and from all parts of Canada. In addition, all graduates in the D.P.H. class, undergraduates in the Fifth year in Medicine, students from the School of Nursing, and various other groups and individuals have made observational visits to the University and Farm sections of the laboratories.

Connaught Laboratories' Fellowships in public health have been awarded this year to students from Manitoba, Quebec and Ontario. Twenty-two of these fellowships have been granted to date. They are most helpful in providing graduate public-health training to physicians who later are to engage in whole-time public-health work. Co-operative undertakings in conjunction with various other university departments, including medicine, hygiene and preventive medicine, and biochemistry, have been carried on during the year, as well as with the Department of Health, Ontario, the Department of Public Health of Toronto, the Hospital for Sick Children, Toronto, and a group of hospitals in other Canadian cities.

It is a great pleasure again to acknowledge with thanks and appreciation the support of the Chai man of the Connaught Laboratories Committee of the Governors, Colonel A. E. Gooderham and his fellow members of the Committee. It is with deep regret that the death, during the year, of one of the original members of the Committee, Mr. Justice Armour, is here recorded.

The Director also thanks his colleagues and associates on the staff of the laboratories for their loyal and hearty co-operation in the discharge of their many and varied responsibilities.

(21) STATEMENT REGARDING THE MUSEUM OF ARCHAEOLOGY

(*Professor C. T. Currelly*)

The year 1933-34 has been one of the most hectic in our history. Owing to a desire to reopen the Museum at as early a date as possible, it was necessary to work very long hours in order to get the material into the cases and into a position of safety, without a chance of getting a large proportion of it mounted or arranged. The biggest job of all was the putting in place of the great Chinese fresco, one of the very fine paintings of the world. The eighty sections in which we had received it were transferred from their heavy mud plaster back to canvas, and then joined up to make the great painting, 41 feet wide and 19 feet high.

The opening took place on October 12th, and a very creditable exhibition was placed before the public, whose appreciation has been beyond our wildest dreams. Since the opening, the rush of work has been continued, in order to place further material on display and to get the exhibits arranged and labelled so as to obtain the best possible teaching results from each gallery.

Activities not possible in the old building were successfully undertaken after the opening. A course of public lectures given by the Directors more than filled the auditorium, so that some of the lectures had to be repeated. Regular class lectures delivered by Miss Home were also extremely well attended. A number of soirées were held, which showed us that the idea of making one gallery in the Museum a possible place for such gatherings was thoroughly justified. Two special exhibitions were held, one of Sir Edmund Walker's great collection of Japanese prints, recently presented by the members of his family, and one of the work of the Society of Canadian Painter-Etchers. At the end of May, the American Association of Museums met in Toronto and used the Museum as its centre. The obvious enthusiasm of the visiting American museum officials as to the material and its installation was very gratifying.

The outstanding acquisition of the year was the Wu Chinese library of 41,000 volumes, presented by Bishop W. C. White, Dr. John C. Ferguson, Dr. Sigmund Samuel, and Sir Robert Mond. Important additions were made to the Chinese collection, particularly of the early material. The very large number of pieces we possess from a group of royal tombs in Old Loyang was considerably augmented; Bishop White's book publishing these tombs and their contents is now in the press.

The Japanese department received a fine iron breastplate, three good pieces of lacquer, fourteen paintings formerly in the Dr. J. Clarence Webster collection, and two very fine painted screens. Through the Reuben Wells Leonard Bequest we were able to acquire three 17th century saddles and a suit of armour of about 1600. The Leonard Bequest was also the means of our obtaining a very fine Indian stone torso of the 10th century.

A few good prehistorics were obtained, a bronze sickle found in the Thames at Hampton Court being of particular interest. A collection of excellent Egyptian scarabs and small bronzes was presented, and a number of very interesting bronzes from the Bucheum, the cemetery of the sacred bulls, at Armant. For the classical department we were able to purchase five Roman portrait busts formerly in the famous Hope collection. A fine glazed pottery pitcher dating about 1360 was a valuable addition to the collection of English potteries. Mr. R. S. Williams' gift of thirty-six autographs of musicians was an interesting addition to the collection of musical instruments.

As gifts of the Members, we were able to obtain eight etchings, an embroidered dress, a Japanese model house for the children's museum, the Norfolk collection of several hundred Ontario Indian specimens, the Paulson collection of ninety Saskatchewan Indian pieces, several articles from Samoa, Fiji and New Zealand, three Navajo blankets, a birdskin parka, a small collection from Spanish Honduras, and a considerable number of other ethnographical specimens.

One of the most gratifying features of the year has been the steady flow of gifts, some from great distances, that has come to us since the Museum has been better known. These gifts have been particularly numerous in the ethnographical section, and the number of important Ontario and other Canadian pieces that have come to us for preservation is a great satisfaction.

In the Museum library, the gift from Mr. S. Yamanaka of several books on Chinese and Japanese art provided not only valuable books of reference but also, from the standpoint of printing, illustration and binding, magnificent examples of book production. Another outstanding addition to the library was Mr. S. G. Curry's gift of "The Monumental Effigies of Great Britain", by C. A. Stothard.

The immense work of the catalogue has been continued. Approximately 2500 objects have been accession catalogued and 359 drawings have been made for the scientific catalogue. Many hundreds of temporary, typewritten labels have been put in the cases, and 789 permanent, hand-printed labels have been made.

(22) STATEMENT REGARDING THE BIOLOGICAL MUSEUM AND ROYAL ONTARIO MUSEUM OF ZOOLOGY

(*Professor J. R. Dymond*)

The re-distribution of material as between the two museums was completed during the year and a re-arrangement of the exhibits in the biological museum has been undertaken with the object of increasing its value for teaching purposes.

The increased space and facilities afforded to the Royal Ontario Museum of Zoology by the new building have made possible a considerable increase in exhibition material. The mounting of a series of the larger mammals of Canada and of some foreign mammals has been made possible through a bequest of Col. Reuben Wells Leonard. The specimens completed to date include adult male and female lions, immature male lion, tiger, snow leopard, polar bear, cinnamon bear, Kermode's bear and moose. The National Parks of Canada, Department of the Interior, Ottawa, has given splendid assistance by supplying very fine specimens of bison, wapiti and mountain sheep from their western parks. Through the co-operation of the Ontario Department of Game and Fisheries, Lt.-Col. A. Coulter McLean, M.P.P., and T. H. Bell, Esq., M.P.P., secured a fine moose.

The acceleration in the rate of increase of the study of research collections noted in previous reports has been maintained.

Among the more notable donations were the following:

A valuable collection of 1345 bird skins representing 1341 genera, acquired for the museum out of the funds of the Col. Reuben Wells Leonard bequest.

Paul Hahn, 22 Bloor St. E., Toronto—14 passenger pigeons, 6 other birds, 1 mammal, 1 nest, 3 eggs and 1 reptile.

H. V. Andrews, 485 Glenholme Ave., Toronto—a collection of 1200 Lepidoptera, collected locally.

C. E. Atwood, Clyde River, Nova Scotia—a collection of 1200 insects, mostly solitary bees.

Miss Mary C. Baine, Brampton, Ontario—a whooping crane.

The late F. H. Gooch, 120 Crescent Rd., Toronto—3 birds including a passenger pigeon.

Wallace Havelock Robb, R.R. 1, Kingston, Ontario—Lives of Game Animals, four volumes, by Seton; Birds of Minnesota, 2 volumes, by Roberts.

Toronto Parks Department, City Hall, Toronto—13 mammals including tiger, leopard, kangaroo, 2 deer, spider monkey and wallaroo, and 12 birds.

Through the generous co-operation of Dr. L. G. Kilborn of West China University, Chengtu, China, the museum secured 4 skins of giant pandas and 2 takins; both of these species are very rare in collections.

During the summer of 1933 the collections of the Provincial Museum were transferred from the Normal School to the Royal Ontario Museum. The material so transferred included 1391 birds, 158 mammals, 267 fish, 119 amphibians and reptiles and 28,000 insects, in addition to much other miscellaneous material. At the same time we received 218 mounted foreign birds which the late John Maughan had donated to the museum some years ago, but which had been on exhibition in the Provincial Museum.

Other donations were received from:—Ralph Akey; John Armstrong; Dr. C. A. Arnott; W. F. Ashdown; Rev. C. L. W. Bailey; Roger Barr; Milburn Bates; Lloyd H. Beamer; W. H. Bennett; L. R. Bernier; E. Birch; D. H. Bissell; R. D. Black; Gustav G. Both; Joseph Breen; Irvin Bresseur; J. F. Brimley; H. H. Brown; W. H. Bryenton; W. Perkins Bull; Homer W. Burke; Dr. Roy. F. Cain; Miss Elizabeth Campbell; Hugh Campbell; J. Campbell; Dr. J. A. Campbell; R. H. Candy; Dr. F. Arnold Clarkson; Dr. Wilbert A. Clemens; R. B. Collins; George H. Corsan; Corp. E. S. Covell; Prof. A. F. Coventry; Allan Crisp; Dr. C. T. Currelly; Murray W. Curtis; E. S. Davison; E. J. Deacon; Lt.-Col. L. S. Dear; O. E. Devitt; Miss Anne Dowell; Stuart C. Downing; Dundurn Park Aviary; W. R. Dymond; J. Edgcombe; R. Edleston; John Edmonds; J. Hunter Edmonds; William E. Edwards; Mrs. Gladstone Evans; Harold Fenney; Ernest Ferris, Paul Ferris; Walter Filman; J. H. Fleming; William N. Forbes; Dr. Norma H. C. Ford; H. E. Foster; D. F. Frayer; Fred E. J. Fry; Harold Fulcher; George N. Gartrell; Robert J. Gill; H. K. Gordon; Wm. Grainger; J. W. Gravestock; Dr. Seymour Hadwen; Walter Hahn; H. A. Hale; Elgin R. S. Hall; Hugh M. Halliday; W. Hanna; Mrs. C. G. Harbour; Prof. W. J. K. Harkness; A. F. Harrington; Dr. Paul Harrington; Dr. John L. Hart; J. A. Harvey; W. E. Heming; Mrs. H. G. Henson; Miss Dorothy V. Holliday; Wm. Holtby; E. R. Hunter; H. A. Hunter; Dr. W. E. Hurlburt; Wm. Hyde; Harry Ing; H. Roy Ivor; Howard Jackson; Dr. Arthur B. James; J. H. Jennings; J. L. Jorgensen; Alfred Kay; Charles E. Kay; Dr. Howard A. Kelly; William Kernan; Jack Kirkwood; J. H. Klein; G. W. Knechtel; Miss Fanny Korn; Monroe Landon; Merritt Leslie; Robert V. Lindsay; Mrs. Alan Lishman; Hoyes Lloyd; London Utilities Commission; Dr. George Lucas; Henry Luke; H. W. Lunn; Captain Lyness; George MacDonald; R. MacDonald; H. G. Macklin; D. E. MacMillan; Temple Martin; K. M. Mayall; Brian McCaffrey; E. G. McDougall; Prof. T. F. McIlwraith; W. E. K. Middleton; Colin McInnis; Dr. James M. McKay; James McLellan; D. C. McPherson; Mrs. Alexander McQueen; Charles Melton; Dr. D. B. Messenger; Lorus J. Milne; John T. Miner; J. E. Minto; Thomas Mitford Moore; Robert Munro; National Parks of Canada; Dr. A. W. H. Needler; William G. Neff; George W. North; Ontario Department of Game and Fisheries; Ontario Fisheries Research Laboratory; Mrs. G. Ormiston; Rod Oxford; T. D. Paterson; G. E. Payne; Miss L. J. Payne; Kenneth Racey; William E. Ricker; Edric V. Rippon; Emerson Robertson; D. B. Robinson; J. B. Robinson; Royal Canadian Institute; Royal Ontario Museum of Archaeology; R. J. Rutter; James Ruxton; W. E. Saunders; Mrs. Servos-Snyder; W. L. Sheridan; Angus H. Shortt; Harry C. Simpson; J. H. Smith; M. W. Smith; R. A. Smith; Robert Smyth; Herbert H.

Southam; Rev. C. A. G. Spence; N. Spreadborough; W. B. Stallworthy; Dr. F. A. E. Starr; Thomas Stovell; Frank B. Strang; Edgar Sullivan; A. E. Swaim; Hampton W. Swaine; H. S. Swarth; F. Talbot; A. L. Tester; G. Thompson; G. C. Toner; Toronto Humane Society; John Townson; George Turner; Alan Twining; Herbert Usher; A. R. Van; Dr. V. D. Vladykov; Pearson Wainman; Mrs. G. H. Waller; Sam Waller; R. E. Watson; Frank Welch; Reginald V. Whelan; W. R. Whittaker; N. Whittet; G. V. Wilby; Bogert Wilson; Clarence H. Wilton; Wallace P. Young.

The library has been increased by the addition of 175 books and 3595 pamphlets.

No large collections were purchased during the year, purchases being limited to incidental material to fill gaps in the systematic collections.

Considerable progress has been made in cataloguing the collections which have been in storage until recently, but much still remains uncatalogued.

(23) STATEMENT REGARDING THE ROYAL ONTARIO MUSEUM OF GEOLOGY

(*Professor E. S. Moore*)

Since the last report was presented much progress has been made, with the small staff available, in the organisation of the storage material and the Museum library. Important additions have been made to the exhibits in the galleries and not only have new exhibits been added but better ones have replaced some of those regarded as inferior. A beginning was made this year in offering in the Museum public lectures on geological subjects. Some help has also been extended to a few schools by supplying collections from duplicate material. Attempts are being made continuously to make the exhibits more interesting and instructive to the large number of visitors to the galleries since it is difficult for the specialist to appreciate how simply scientific subjects must be presented to appeal to the layman. The animated exhibit is becoming an increasingly important feature of many of the best scientific museums of the world. In an effort to advance education in scientific subjects the first animated exhibit was prepared this year in the form of a miniature oil well with typical geological features combined with an operating pump. This was constructed at the museum and is now operating in the gallery. Three new life members were added to the roll of benefactors and the additions to the collections during the year are as follows:

Donations:—A fine model of an oil field showing the company's leases in East Texas. Presented by British American Oil Company, Limited, Toronto.

Silvertone marble (a fine black marble recently developed in Ontario) from Russell county, by Silvertone Black Marble Quarries, Ottawa.

Large specimen of zinc ore from Mascot mine, Tennessee, by the American Zinc Company of Tennessee.

Gold ore from Beattie gold mine, Quebec, by Mr. A. J. Keast, Beattie Gold Mines, Limited.

Copper, lead and zinc ores from Arizona, by Dean G. M. Butler, Tuscon, Arizona.

Gold ore from God's lake, Manitoba, by Mr. R. Jowsey.

Gold ore from the Rand, South Africa, by Mr. J. L. Beach.

Veins of fluorite from Madoc, Ont., by Prof. A. MacLean.

Gold ore from Young-Davidson mine, Matachewan, Ont., and large specimens of unusual porphyries, by Dr. G. H. Charlewood.

Specimen of feldspar porphyry from Matachewan, Ont., by Mr. A. W. Derby.

Important additions to the Museum library in collections of books from the Provincial Museum, Mrs. A. G. Burrows, Professor A. P. Coleman.

Purchases:—High grade gold ore from O'Brien-Cadillac mine, Quebec.

An exceptionally fine collection of radium and silver ores from Great Bear lake, N.W.T. Purchased from Eldorado Gold Mines Limited as part of the Reuben Wells Leonard Bequest.

Coloured transparencies of rooms in the caverns at Luray, Virginia.

Model of an oil well with operating pump. (Constructed at the Museum).

Collections:—Collections, by the Director, of fluorite from Illinois, aluminium ore from Arkansas, iron ore from Alabama and New York and rock specimens from Ontario.

(24) STATEMENT REGARDING THE ROYAL ONTARIO MUSEUM OF MINERALOGY

(*Director, Professor T. L. Walker*)

The attention of the staff, prior to the official re-opening of the Museum in October, was largely devoted to the final selection, arrangement and labelling of the specimens. At that time this work was completed for both the material on display and for the much greater quantity stored beneath the cases. In view of the urgency of this work another most important function suffered, for there was little opportunity for collecting and field work. The Director spent about three weeks in a trip to Western Canada in the summer of 1933, and the Assistant Director has been able to make only one trip of about a week to negotiate exchanges.

The functions of this Museum include the following:

(*a*) Provision of a series of type minerals and rocks as complete as possible for comparison.

(*b*) Display for use of students and visitors of typical specimens of the more important minerals and rocks, suitably labelled, with a view to training in Mineralogy and disseminating information as to the mineral resources of the Province.

(*c*) Field work to secure material for display, exchange and scientific study.

(*d*) General investigations, based largely on the minerals in the Museum and designed to extend the bounds of the mineralogical field—the origin, characteristics, alteration and uses of minerals and rocks.

(*e*) The furthering of the interest in the mineral industry by a popular presentation of special features connected with the occurrence and uses of our mineral resources.

In the past the attention of the staff has been directed to the first four functions. With the opening of the new building it has been possible to make a beginning on the fifth. During the winter a series of popular lectures was inaugurated by the five Museums. In this series the Director of this Museum lectured on "The Functions of the Royal Ontario Museum of Mineralogy" and the Assistant Director on "The Semi-precious and Ornamental Stones of Canada". With the establishment of this course of lectures, a plan which had been in the minds of the directors for many years was put into effect. The attendance was such as to demonstrate that the course was in accord with the public desire.

More and more the great museums are resorting to visual methods of instructing the public. With this end in view the Museum of Mineralogy is installing an automatic Balopticon so as to show the public many phases of the study of minerals which cannot be satisfactorily dealt with by the mere display of specimens.

In connection with the popular presentation of special features, the directors have been conducting an experiment with the object of stimulating an interest in the semi-precious and ornamental stones of Canada. With this in view they have had articles cut from Canadian materials to be sold as souvenirs. The results already obtained fully justify the experiment, and it is hoped that it may lead to the establishment of a small gem cutting industry in Canada.

As usual, there have been additions due to purchase, collection in the field, exchange and presentation. Important presentations during the year are:

1. A large specimen of crystallised Aragonite from Sullivan Mine, Kimberley, B.C., by B. T. O'Grady, Esq.
2. A large specimen of the low grade zinc ore at Franklin, New Jersey, by the New Jersey Zinc Company.
3. A large specimen of asphalt from Trinidad by C. R. Stollmeyer, Esq.
4. The collection of minerals and rocks from the Ontario Provincial Museum

The growth of the Museum depends more and more upon exchange with other museums and with active scientists. This phase of the work occupies a large part of the time, more particularly of the Assistant Director, and, as a result, our systematic collection ranks high among the important museums of the world. In addition to numerous exchanges involving postal parcels, notable exchanges have been made during the past year with:

The United States National Museum.
Harvard University.
Kyancutta Museum.
British Museum.
Institute for Economic Mineralogy, Moscow.

To all who have co-operated in the development of the Museum the Director expresses his thanks.

(25) STATEMENT REGARDING THE ROYAL ONTARIO MUSEUM OF PALAEONTOLOGY

(*Professor W. A. Parks*)

During the year 1933-34 the chief new installations were as follows:

(*a*) The arranging of a systematic popular collection in 9 special cases.
(*b*) Six large restorations of geological landscapes painted by G. A. Reid.
(*c*) The placing of a series of bronze-framed alcove labels in the invertebrate gallery.

The vertebrate preparators were engaged throughout the year in mounting a skeleton of a large trachodont dinosaur (probably a new species) and in similar work on the skeleton of a carnivorous dinosaur. It is expected that both these skeletons will be mounted in the gallery next year. During the summer of 1933 the usual expedition was despatched to the Red Deer River, Alberta. The material obtained is listed below.

During the year a number of new species of invertebrate fossils have been added to the collections through the work of the Director, Dr. M. A. Fritz, Mr. H. G. Way, Mr. J. F. Caley, and Mr. J. C. Sproule.

The more important acquisitions during the year are as follows:

By donation

Miscellaneous collection of vertebrate and invertebrate fossils—Dept. of Biology, University of Toronto.
A Devonian coral, *Blothrophyllum decorticatum*—Mr. W. A. Davidson, Toronto.
Favosites gothlandica, Lockport limestone, Lions Head, Ont.—Mr. J. A. Denovan, Toronto.
A collection of Canadian Jurassic fossils—Geological Survey of Canada.
Harpoceras radians, Liassic, from Frocester Hill, England—Mr. Paul Hahn.
Collection of invertebrate fossils—Mr. Walter Hahn—Toronto.

Fossil boring in wood—Professor H. S. Hutchison, University of Toronto.
Sigillaria (seal tree) from Glace Bay, No. 11 Mine, Dominion Coal Company —Mr. A. McCluskey, Lanarkshire, Scotland.
Collection of vertebrate and invertebrate fossils—The Provincial Museum, Toronto.
Specimen of *Palaeophyllum williamsi*, Chadwick, from Manitoulin island—Mrs. D. W. Robinson, 38 Follis Ave., Toronto.
Coral—*Columnaria* from Lake Simcoe—Ronald Sedgwick, Toronto.
Collection of Lockport and Guelph Fossils from the Bruce peninsula—Mr. G. A. Reid, Toronto.

By purchase

Collection of fossils from the Lower Cretaceous of Texas—John B. Litsey, Dallas, Texas.
Promopalaeaster solitarius, Fritz, Dundas formation, New Toronto—Mr. W. E. Warwood, New Toronto, Ont.
Head of *Bison crassicornis*—Mr. J. J. Elliott, Whitehorse, Yukon Territory.

By exchange

Large collection of Tertiary invertebrates including casts in plaster and sulphur of type specimens—Dr. Martin Doello-Juardo, Director del Museo Nacional de Historia Natural, Buenos Aires, Argentina.
Collection of invertebrate fossils—Dr. Ehlers, Ann Arbor, Michigan.
Collection of vertebrates from the Field Museum, Chicago (per Dr. E. S. Riggs).
Series of crinoids from Gilmore City formation of Iowa—Mr. L. R. Laudon, University of Tulsa, Tulsa, Okla.

By collection

Potsdam brachiopods and other invertebrates from near Ottawa, Ontario—Dr. M. A. Fritz.
Large collection of Silurian fossils from Manitoulin Is. and Bruce peninsula, including many new types—Mr. H. G. Way, Toronto.
Collection of Ordovician fossils from Manitoulin Is.—Mr. J. F. Caley, Toronto.
Collection of Silurian fossils from Ontario—Mr. J. P. Nowlan, Toronto.
Collection of fossils from the Guelph of Ontario—Mr. E. W. Shaw, Toronto.
Collection of fossils from the Cobourg of Ontario—Mr. J. C. Sproule, Toronto.
Summer expedition—per Mr. L. Sternberg
    Skull of *Anchiceratops*
    Partial skeleton of a small trachodont
    Good skull and jaws of *Edmontosaurus*
    Skull of a Cretaceous trachodont possibly new to science
    A skeleton of a large carnivorous dinosaur
    Skull of another crested trachodont
    Tail, hind legs, and feet of still another trachodont

APPENDIX B

REPORT OF THE REGISTRAR

(*A. B. Fennell, Esq., M.A.*)

I beg to submit the following statistics for the year ending June 30th, 1934:—

(*a*) Distribution of the staff of the University and University College (furnished by the Bursar).
(*b*) Distribution of the staffs of the federated Arts Colleges (furnished by the Registrars of the colleges).
(*c*) Registration of students by faculties and years.
(*d*) Enrolment in the Arts Colleges (furnished by the Registrars of the colleges).
(*e*) Enrolment in the university departments in Arts (furnished by the departments).
(*f*) Registration in courses in the Faculty of Arts.
(*g*) Registration in courses in the School of Graduate Studies (furnished by the Secretary of the school).
(*h*) Results of annual examinations (furnished by the Secretaries of the faculties).
(*i*) Admission to degrees.
(*j*) Geographical distribution of students (furnished by the Secretaries of the faculties).

(*a*) Distribution of the Staff of the University and University College:

	Professors	Associate Professors	Assistant Professors	Associates	Lecturers	Directors	Assistant Directors	Instructors	Other Sessional Appointments
University (Faculty of Arts)	40	33	17	—	38	—	—	—	126
University College	15*a*	7	9	—	12	—	—	—	3
Faculty of Medicine	23*b*	11	22	27	27*c*	—	—	—	189*d*
Faculty of Applied Science	15	12	7	—	18	—	—	—	50*b*
Faculty of Household Science	2	—	2	—	4	—	—	—	9
Ontario College of Education	8	4	3	—	7	—	—	37*e*	—
Faculty of Forestry	2	1	—	—	8	—	—	—	1*f*
Faculty of Music	—	—	—	—	4	—	—	—	1
Faculty of Dentistry	11	6	1*g*	20	2	—	—	—	8*h*
Social Science	—	—	1	—	17*i*	1*b*	1	—	—
School of Nursing	—	—	—	—	1	1	2	—	42*j*

a 1 also in University
b 1 also in Arts
c 1 also in Arts; 1 also in Applied Science; 2 also in Dentistry
d 2 also in Arts
e 1 also in University; 2 also in University College
f also in Arts and Dentistry
g also in Medicine
h 1 also in Arts and Forestry
i 1 also in Dentistry
j 1 also in Dentistry; 25 also in Medicine

(*b*) Distribution of the Staffs of the Federated Arts Colleges:

	Victoria College	Trinity College	St. Michael's College
Professors	14	10	11
Associate professors	6	4	10
Lecturers	7	5	10
Instructors	1	3	6
Fellows	4	..	..
Readers	2	..	..

(*c*) Registration of Students by Faculties and Years:

The number of students registered in the university, in colleges and faculties, in the session 1933-34 was 7,509, distributed as follows:

				Men	Women	Total
Faculty of Arts				2,136	1,630	3,766
University of Toronto	525	250	775			
University College	773	607	1,380			
Victoria College	486	522	1,008			
Trinity College	199	155	354			
St. Michael's College	159	109	268			
Registered twice	6	13	19			
Faculty of Medicine				758	66	824
Faculty of Applied Science and Engineering				877	6	883
Faculty of Household Science				...	67	67
Ontario College of Education				520	480	1,000
Faculty of Forestry				59	...	59
Faculty of Music				19	15	34
School of Graduate Studies				512	208	720
Faculty of Dentistry				180	30	210
Registered twice				43	11	54
				5,018	2,491	7,509

In departments there were registered 300, distributed as follows:

Department of Social Science	1	77	78
School of Nursing	...	216	216
University Extension (Occupational Therapy)	...	...	...
University Extension (Physiotherapy)	...	6	6
	1	299	300

The grand total of registration for the whole university was 7,809, of whom 5,019 were men and 2,790 were women.

In addition there were 4,063 persons registered in the Department of University Extension in courses and at provincial centres which are referred to in detail in Appendix A (14).

The figures may be further analysed as follows:

Faculty of Arts

University of Toronto

	Men	Women	Total
Teachers' Courses and Summer Session	313	215	528
Occasional Arts students	212	35	247
	525	250	775

University College

	Men	Women	Total
First year undergraduates	255	186	441
Second year undergraduates	210	167	377
Third year undergraduates	159	117	276
Fourth year undergraduates	135	106	241
Occasional students	14	31	45
	773	607	1,380

Victoria College

	Men	Women	Total
First year undergraduates	181	156	337
Second year undergraduates	140	156	296
Third year undergraduates	89	102	191
Fourth year undergraduates	71	94	165
Occasional students	5	14	19
	486	522	1,008

Trinity College

	Men	Women	Total
First year undergraduates	84	62	146
Second year undergraduates	62	39	101
Third year undergraduates	32	41	73
Fourth year undergraduates	19	12	31
Occasional students	2	1	3
	199	155	354

St. Michael's College

	Men	Women	Total
First year undergraduates	80	42	122
Second year undergraduates	36	31	67
Third year undergraduates	22	11	33
Fourth year undergraduates	20	19	39
Occasional students	1	6	7
	159	109	268

Faculty of Medicine

	Men	Women	Total
First year undergraduates	125	14	139
Second year undergraduates	145	9	154
Third year undergraduates	134	11	145
Fourth year undergraduates	131	7	138
Fifth year undergraduates	102	10	112
Sixth year undergraduates	96	11	107
Candidates for Degree of B.Sc. (Med.)	6	..	6
Candidates for D.P.H.	12	1	13
Diploma in Radiology	1	..	1
Post Graduate students	6	3	9
	758	66	824

Faculty of Applied Science and Engineering

	Men	Women	Total
First year undergraduates	225	1	226
Second year undergraduates	236	2	238
Third year undergraduates	204	..	204
Fourth year undergraduates	204	2	206
Fifth year undergraduates	8	1	9
	877	6	883

Faculty of Household Science

	Men	Women	Total
First year undergraduates	..	9	9
Second year undergraduates	..	8	8
Third year undergraduates	..	6	6
Fourth year undergraduates	..	43	43
Occasional student	..	1	1
	..	67	67

Ontario College of Education

	Men	Women	Total
Students in attendance	214	330	544
Extra-mural students	102	114	216
Students in B.Paed. course	215	38	253
Registered twice	11	2	13
	520	480	1,000

Faculty of Forestry

	Men	Women	Total
First year undergraduates	9	...	9
Second year undergraduates	16	...	16
Third year undergraduates	22	...	22
Fourth year undergraduates	12	...	12
	59	...	59

Faculty of Music

	Men	Women	Total
First year undergraduates	4	4	8
Second year undergraduates	8	5	13
Third year undergraduates	7	3	10
Occasional students	...	3	3
	19	15	34

School of Graduate Studies

	Men	Women	Total
Candidates for Ph.D	133	19	152
Candidates for M.A	147	82	229
Candidates for M.S.	8	...	8
Candidates for M.A.Sc	14	...	14
Candidates for C.E	2	...	2
Candidates for E.E	3	...	3
Candidates for D.Paed	93	13	106
Candidates for M.Sc.F	4	...	4
Candidates for M.S.A	12	...	12
Candidates for M.Sc. (Dent.)	3	...	3
Candidates for D.V.Sc.	1	...	1
Candidates for M.V.Sc	1	...	1
Candidates for Mus. Doc	1	...	1
Graduate students	90	94	184
	512	208	720

Faculty of Dentistry

	Men	Women	Total
First year undergraduates	18	2	20
Second year undergraduates	43	...	43
Third year undergraduates	42	..	42
Fourth year undergraduates	37	1	38
Fifth year undergraduates	34	1	35
Candidates for Degree of B.Sc. (Dent.)	6	...	6
Dental Nurses	...	25	25
Occasional student	...	1	1
	180	30	210

Department of University Extension

	Men	Women	Total	Grand Total
B.A. Course				
Summer Session:				
Regular students	123	101	224	...
Occasional students	5	2	7	231
Teachers' Classes:				
Toronto:				
Regular students	218	112	330	...
Occasional students	6	6	12	342
Ottawa:				
Regular students	4	17	21	...
Occasional students	1	...	1	22
Specialists' Courses				
Summer Session:				
Regular students	20	5	25	25
Registered twice	64	28	92	92
	313	215	528	528

Department of Social Science

	Men	Women	Total
First year full-time students	...	28	28
Second year full-time students	1	16	17
"Apprentice" students (Second year)	...	4	4
Part-time students	...	29	29
	1	77	78

School of Nursing

	Men	Women	Total
Full-time students	...	50	50
Part-time students	...	166	166
	...	216	216

(*d*) Enrolment in the Arts Colleges

(1) University College:

	Greek	Latin	Ancient History	Orientals	Ancient Oriental History	English	German	German (Sc.)	French	Ethics	Oriental Literature
First Year—											
Pass	17	23	13	21	13	220	31	109	305	16	146
Honours	9	48	78	..	..	56	26	..	58	12	..
Second Year—											
Pass	4	19	31	12	12	177	19	35	180	52	106
Honours	6	32	12	2	2	48	14	..	43	5	..
Third Year—											
Pass	3	7	48	8	16	85	7	19	69	30	75
Honours	9	25	6	..	..	34	7	..	18	4	..
Fourth Year—											
Pass	1	10	14	5	5	78	5	..	46	25	80
Honours	5	18	8	..	..	33	13	..	20	2	..
Totals—											
Pass	25	59	106	46	46	560	62	163	600	123	407
Honours	29	123	104	2	2	171	60	..	139	23	..
Teachers' Courses	..	9	..	..	..	75	12	..	56	..	..
Graduate Studies	3	2	3	14	..	55	4	..	17	..	..
Other Faculties	..	..	..	..	..	..	246	..	93	60	..
Grand Total	57	193	213	62	48	861	384	163	905	206	407

(2) Victoria College:

	Greek	Latin	Ancient History	Orientals	Ancient Oriental History	English	German	German (Sc.)	French	Ethics	Religious Know.
First Year—											
Pass	3	20	28	2	3	150	18	66	219	10	146
Honours	11	32	56	..	..	37	18	..	18	11	..
Second Year—											
Pass	2	16	30	1	3	148	5	19	123	35	128
Honours	7	22	7	..	..	38	17	..	21	2	..
Third Year—											
Pass	2	8	27	..	..	42	8	..	41	43	66
Honours	16	20	16	..	..	20	13	..	22	6	..
General	..	..	..	..	..	3	..	..	..	..	..
Fourth Year—											
Pass	1	10	24	3	..	44	2	..	30	40	58
Honours	11	12	12	..	..	22	9	..	12	7	..
Totals—											
Pass	8	54	109	6	6	384	33	85	413	128	398
Honours	45	86	91	..	..	117	57	..	73	26	..
General	..	..	..	..	..	3	..	..	..	..	..
Grand Total	53	140	200	6	6	504	90	85	486	154	398

(3) Trinity College:

	Greek	Latin	Ancient History	Orientals	Ancient Oriental History	English	German	German (Sc.)	French	Ethics	Religious Know.
First Year—											
Pass	2	14	7	..	..	56	6	22	77	7	135
Honours	4	13	14	..	..	19	2	..	20	..	..
Second Year—											
Pass	1	5	4	..	..	46	5	2	34	14	94
Honours	4	4	4	..	..	12	4	..	9	..	..
Third Year—											
Pass	2	4	1	..	..	34	7	..	32	15	47
Honours	5	6	4	..	..	4	2	..	6	..	..
Fourth Year—											
Pass	..	1	..	1	..	3	..	..	6	2	29
Honours	2	3	2	..	..	3	5	..	6	..	..
Totals—											
Pass	5	24	12	1	..	139	18	24	149	38	305
Honours	15	26	24	..	..	38	13	..	41	..	..
Grand Total	20	50	36	1	..	177	31	24	190	38	305

(4) St. Michael's College:

	Greek	Latin	Ancient History	English	German	German (Sc.)	French	Ethics	Philosophy	Religious Know.
First Year—										
Pass	2	50	2	56	4	10	57	..	51	55
Honours	2	10	6	12	3	..	9	..	9	35
Second Year—										
Pass	..	33	1	44	3	..	35	20	34	28
Honours	1	5	2	5	2	..	5	7	7	23
Third Year—										
Pass	..	19	..	22	..	..	18	15	39	31
Honours	2	3	1	..	1	..	2	1	1	9
Fourth Year—										
Pass	..	23	..	16	..	..	17	6	..	21
Honours	1	2	1	..	2	..	3	10	10	17
Totals—										
Pass	2	125	3	138	7	10	127	41	124	135
Honours	6	20	10	18	8	..	19	18	27	84
Grand Total	8	145	13	156	15	10	146	59	151	219

(*e*) Enrolment in the University Departments in Arts:

The following tables exhibit the numbers attending lectures in the university departments in the Faculty of Arts, together with the number of those taking the practical work in the laboratories :

Department of Mathematics

	Lecture Courses					
	1 or 2 or 3 hours		4 or 5 or 6 hours		7 or more hours	
	Pass	Honour	Pass	Honour	Pass	Honour
Faculty of Arts—						
First Year	135	..	..	70	..	85
Second Year	246	58	..	..	..	42
Third Year	41	48	..	..	..	12
Fourth Year	3	..	12	..	..	12
Teachers' Classes	27	..	..	..	..	..
Occasional Students	4	..	3	..	..	5
Faculty of Medicine—						
First Year	28	..	..	..	..	..
Faculty of Applied Science and Engineering—						
First Year	..	..	225	..	..	..
Second Year	192	..	..	..	..	..
Faculty of Forestry—						
First Year	..	..	11	..	..	..
School of Graduate Studies	..	39	..	..	..	..
College of Optometry of Canada	14	..	..	..	..	..
Totals	690	145	251	70	..	156

Department of Applied Mathematics

	Pass and Honour	Honour
Faculty of Arts—		
Second Year	..	44
Third Year	..	31
Fourth Year	..	8
Occasional Students	..	4
Faculty of Applied Science and Engineering—		
Second Year	59	..
School of Graduate Studies	..	30
Totals	59	117

Department of Astronomy

	Pass	Pass and Honour	Honour	Laboratory
Faculty of Arts—				
First Year	6	..	..	6
Second Year	48	..	..	2
Third Year	5	4	17	18
Fourth Year	..	..	3	2
Teachers' Classes	44	..	..	44
Faculty of Applied Science and Engineering—				
Second Year	26	..	..	..
School of Graduate Studies	..	..	2	..
Department of University Extension—				
Evening Classes	40	..	..	..
Totals	169	4	22	72

Department of Physics

	Pass	Pass and Honour	Honour	Laboratory
Faculty of Arts—				
First Year	175	..	266	316
Second Year	32	..	122	110
Third Year	20	..	37	47
Fourth Year	7	..	26	26
Summer Session (Specialists' Courses)	..	..	14	14
Faculty of Medicine—				
First Year	..	141	..	141
Third Year	..	2	..	2
Faculty of Household Science—				
First Year	9	..	..	9
Faculty of Forestry—				
First Year	..	11	..	11
Faculty of Dentistry—				
First Year	..	21	..	21
School of Graduate Studies	..	..	72	35
College of Optometry of Canada	..	28	..	28
Department of University Extension—				
Physiotherapy	7	..	..	7
Totals	250	203	537	767

Department of Biology

	Lecture Courses		Laboratory Courses	
	Pass	Honour	Pass	Honour
Faculty of Arts—				
First Year	218	169	93	169
Second Year	66	120	66	120
Third Year	25	51	25	16
Fourth Year	40	11	44	3
Faculty of Medicine—				
First Year	..	139	..	139
Third Year	..	11	..	11
Faculty of Household Science—				
First Year	..	8	..	8
Faculty of Forestry—				
First Year	..	11	..	11
Fourth Year	..	12	..	12
Faculty of Dentistry—				
First Year	..	21	..	21
School of Graduate Studies	..	..	..	51
Department of Social Science—				
Second Year	..	11	..	..
School of Nursing	..	9	..	9
Ontario Agricultural College	..	300	..	300
College of Optometry of Canada	..	26	..	26
Totals	349	899	228	896

Department of Botany

	Lecture Courses		Laboratory Courses	
	1 or 2 or 3 hours			
	Pass	Honour	Pass	Honour
Faculty of Arts—				
First Year	139	173	14	173
Second Year	15	19	14	70
Third Year	17	10	17	10
Fourth Year		5		5
Teachers' Classes	29	..	29	..
Summer Session (Teachers' Course)	15	..	15	..
Faculty of Applied Science and Engineering—				
First Year	..	..	78	..
Faculty of Household Science—				
First Year	..	..	9	..
Second Year	..	..	..	8
Faculty of Forestry—				
First Year	..	11	..	11
Fourth Year	..	..	..	12
School of Graduate Studies	..	..	..	27
Ontario College of Pharmacy				
First Year	79	..	79	..
Second Year	..	..	87	..
Totals	294	218	342	316

Department of Chemistry

	Pass	Pass and Honour	Honour	Laboratory
Faculty of Arts—				
First Year	199	..	263	337
Second Year	40	..	133	149
Third Year	15	..	34	45
Fourth Year	..	..	9	9
Teachers' Classes	28	..	..	28
Occasional Student	1	..	..	..
Faculty of Medicine—				
First Year	..	141	..	141
Second Year	..	139	..	139
Faculty of Applied Science and Engineering—				
First Year	..	84	..	84
Second Year	..	74	..	74
Third Year	..	112	..	112
Fourth Year	..	12	..	12
Faculty of Household Science—				
First Year	..	11	..	11
Second Year	..	9		..
Faculty of Forestry—				
First Year	11	..	..	11
Second Year	15	..	..	..
Faculty of Dentistry—				
First Year	..	21	..	21
Second Year	..	43	..	43
Third Year	..	42	..	42
School of Graduate Studies	..	40	..	27
Ontario College of Pharmacy—				
First Year	79	..	..	79
Second Year	88	..	..	88
College of Optometry of Canada	21	..	..	..
Totals	497	728	439	1,452

Department of Geology and Palaeontology

	Lecture Courses						Laboratory Courses	
	1 or 2 or 3 hours		4 or 5 or 6 hours		7 or more hours			
	Pass	Honour	Pass	Honour	Pass	Honour	Pass	Honour
Faculty of Arts—								
First Year	157	124	..	..	..	..	..	..
Second Year	..	19	..	..	..	..	..	19
Third Year	10	5	..	..	..	..	10	5
Fourth Year	20	..	..	..	..	1	20	1
Occasional Students	..	1	..	..	..	..	..	1
Faculty of Applied Science and Engineering—								
Second Year	44	11	..	..	..	..	..	11
Third Year	..	47	..	..	..	..	..	12
Fourth Year	..	13	..	..	..	..	..	13
Faculty of Forestry—								
Second Year	17	..	..	..	..	..	..	..
Third Year	..	23	..	..	..	..	..	23
School of Graduate Studies	..	1	..	2	..	11	..	18
Totals	248	244	..	2	..	12	30	103

Department of Mineralogy and Petrography

	Pass	Pass and Honour	Honour	Laboratory
Faculty of Arts—				
First Year	28	..	..	28
Second Year	..	..	20	20
Third Year	..	1	15	11
Fourth Year	..	..	1	1
Occasional Students	..	..	1	1
Faculty of Applied Science and Engineering—				
First Year	..	126	..	126
Second Year	..	46	..	46
Third Year	..	12	..	12
Fourth Year	..	1	..	1
Faculty of Forestry—				
Second Year	..	17	..	17
School of Graduate Studies	..	..	5	5
Totals	28	203	42	268

Department of Philosophy

	Pass	Pass and Honour	Honour
Faculty of Arts—			
First Year	147	..	28
Second Year	198	46	24
Third Year	178	..	16
Fourth Year	167	..	16
School of Graduate Studies	..	..	58
Department of Social Science—			
First Year	15	..	..
Department of University Extension—			
Evening Classes	20	..	..
Totals	725	46	142

Department of Psychology

	Lecture Courses						Laboratory Courses	
	1 or 2 or 3 hours		4 or 5 or 6 hours		7 or more hours			
	Pass	Honour	Pass	Honour	Pass or General	Honour	Pass	Honour
Faculty of Arts—								
First Year........	136	..	..	12	..	..	..	..
Second Year......	154	..	4	7	..	7	114	7
Third Year.......	97	..	..	10	2	6	24	18
Fourth Year......	107	..	..	8	..	4	..	12
Teachers' Classes..	87	..	..	..	..	..	..	..
Teachers' Classes, Correspondence..	47	..	..	..	..	..	..	..
Occasional Students	5	..	..	..	..	..	..	..
Faculty of Medicine—								
Second Year......	..	129	..	..	..	..	..	..
Third Year.......	24	..	..	..	..	..	24	..
Fourth Year......	29	..	..	..	..	..	..	..
Faculty of Household Science—								
First Year........	6	..	..	..	..	..	..	..
Second Year......	3	..	..	..	..	..	..	..
School of Graduate Studies...........	..	35	..	10	..	20	..	28
Department of Social Science—								
First Year........	22	..	..	..	..	..	..	..
Second Year......	20	..	..	..	..	..	..	..
School of Nursing...	33	..	..	..	..	..	..	..
College of Optometry of Canada........	16	..	..	..	..	..	..	..
Department of University Extension—								
Physiotherapy....	6	..	..	..	..	..	..	..
Evening Classes...	170	..	..	..	..	..	..	..
Centralised Pupil Nurses.........	188	..	..	..	..	..	..	..
Totals.......	1,150	164	4	47	2	37	162	65

Department of Political Science

	Lecture Courses					
	1 or 2 or 3 hours		4 or 5 or 6 hours		7 or more hours	
	Pass	Honour	Pass	Honour	Pass	Honour
Faculty of Arts—						
First Year	171	13	5	..	..	154
Second Year	214	10	..	..	19	123
Third Year	121	..	..	..	33	90
Fourth Year	80	7	..	..	..	75
Occasional Students	4	..	1	3	..	..
Faculty of Household Science—						
Third Year	4	..	..	..	..	..
Fourth Year	10	..	..	..	..	..
Faculty of Forestry—						
Third Year	21	..	..	..	..	..
School of Graduate Studies	..	40	..	..	..	..
Department of Social Science—						
First Year	..	7	..	..	..	..
Second Year	..	7	..	..	..	..
Totals	625	84	6	3	52	442

Department of Modern History

	Lecture Courses					
	1 or 2 or 3 hours		4 or 5 or 6 hours		7 or more hours	
	Pass	Honour	Pass	Honour	Pass	Honour
Faculty of Arts—						
First Year	148	80	..	61	..	..
Second Year	111	17	..	66	..	..
Third Year	85	..	..	43	..	..
Fourth Year	46	12	..	31	..	6
Teachers' Classes	100	..	..	..	..	..
Occasional Students	6	4	..	..	..	..
School of Graduate Studies	..	20	..	7	..	15
Special Extension Classes	119	..	..	..	..	..
Totals	615	133	..	208	..	21

Department of Italian and Spanish

	Italian		Spanish	
	Pass	Honour	Pass	Honour
Faculty of Arts—				
First Year	20	9	104	39
Second Year	11	7	68	23
Third Year	4	6	39	14
Fourth Year	..	4	20	14
School of Graduate Studies	..	..	..	5
Totals	35	26	231	95

Department of Household Science
(Faculty of Household Science)

	Pass	Pass and Honour	Honour	Laboratory
Faculty of Arts—				
First Year	..	..	46	..
Second Year	16	..	53	69
Third Year	5	1	35	41
Fourth Year	4	..	32	36
Occasional Students	..	..	8	8
Faculty of Household Science—				
First Year	..	9	..	..
Second Year	..	8	..	8
Third Year	..	3	3	6
Fourth Year	37	..	6	43
School of Graduate Studies	..	..	8	8
School of Nursing	22	..	..	22
Totals	84	21	191	241

Department of Food Chemistry
(Faculty of Household Science)

	Pass	Pass and Honour	Honour	Laboratory
Faculty of Arts—				
Second Year	23	..	..	23
Third Year	6	..	2	8
Fourth Year	8	..	32	40
Faculty of Household Science—				
Second Year	..	8	..	8
Third Year	3	..	..	3
Fourth Year	37	..	6	43
Occasional Students	1	..	..	1
School of Graduate Studies	..	..	6	6
Candidates for Specialist Certificates	..	..	7	7
Totals	78	8	53	139

Department of Anthropology

	Pass	Pass and Honour	Honour
Faculty of Arts—			
First Year	10	..	11
Second Year	..	8	15
Fourth Year	51	..	..
School of Graduate Studies	..	..	6
Department of Social Science—			
First Year	..	..	30
Totals	61	8	62

(*f*) **Registration in Courses in the Faculty of Arts**

Courses	First Year				Second Year				Third Year				Fourth Year				
	U C	V C	T C	M C	U C	V C	T C	M C	U C	V C	T C	M C	U C	V C	T C	M C	Totals
Pass	175	126	51	82	163	136	44	42	100	54	39	28	89	56	7	22	1,214
General	..	..	..	..	..	..	..	..	8	4	..	..	..	..	..	..	12
Classics	9	6	4	..	6	4	5	..	5	11	4	1	4	4	2	1	66
Greek and Hebrew	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	2
Latin (French or Greek Option)	8	6	2	5	4	3	..	3	..	5	..	..	4	7	1	1	49
Modern Languages	29	16	10	4	21	21	7	4	13	21	6	2	19	13	6	2	194
English and History	23	19	8	2	17	16	2	2	20	13	4	..	21	17	2	..	166
Modern History	1	3	2	1	5	3	3	..	1	2	1	..	4	3	2	..	31
Political Science and Economics	18	15	20	1	17	16	12	..	10	8	2	..	11	..	3	..	133
Sociology	1	5	1	..	4	4	..	..	..	..	..	..	..	..	..	..	15
Law	18	10	3	..	8	3	6	..	7	3	3	..	4	4	..	..	69
Philosophy	1	1	..	8	5	2	..	7	2	1	..	1	2	4	2	10	46
Philosophy (English or History Option)	10	10	3	2	3	7	1	..	2	5	..	..	1	3	..	..	47
Psychology	3	1	..	..	5	1	1	..	2	4	..	..	3	1	..	..	21
Mathematical and Physical Sciences	45	30	7	5	..	..	..	..	..	..	..	..	..	..	..	..	87
Mathematics and Physics	..	..	..	..	19	12	2	4	14	9	3	1	12	8	..	2	86
Physics and Chemistry	..	..	..	..	3	1	..	..	3	..	..	..	1	..	..	..	8
Physics and Geology	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1
Natural and Physical Sciences	55	35	22	10	..	..	..	..	..	..	..	..	..	..	..	..	122
Biology	..	..	..	..	7	6	..	..	8	1	1	..	3	..	..	..	26
Physiology and Biochemistry	..	..	..	..	2	1	1	..	3	1	..	..	..	2	..	..	10
Biological and Medical Sciences	..	..	..	..	19	12	6	2	21	4	1	..	7	8	3	..	83
Chemistry	..	..	..	..	7	6	..	..	4	..	1	..	3	5	..	..	26
Chemistry, Mineralogy and Geology	..	..	..	..	2	..	..	..	2	5	..	..	..	..	..	..	9
Geology and Mineralogy	..	..	..	..	..	1	..	..	1	1	..	..	1	..	..	..	4
Science (General)	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	3
Food Chemistry	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2
Household Economics	18	24	4	..	27	18	5	1	15	17	3	..	16	14	1	1	164
Commerce and Finance	27	30	9	2	31	20	6	2	33	21	5	..	36	16	2	..	240
Totals	441	337	146	122	377	296	101	67	276	191	73	33	241	165	31	39	2,936

(*g*) Registration in Courses in the School of Graduate Studies

Department	Ph.D.	M.A.	M.S.	M.A. Sc.	C.E.	E.E.	D. Paed.	M.Sc. F.	M.S.A.	M.Sc. (Dent.)	D.V. Sc.	M.V. Sc.	Mus. Doc.	Grad. Stud.
Anatomy	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Applied Mathematics	1	1	..	..	..	..	..	..	..	..	..	..	..	1
Anthropology	..	1	..	..	..	..	..	..	..	..	..	..	..	1
Astronomy	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Biochemistry	10	4	..	..	..	..	..	..	..	..	..	..	..	4
Biology	18	7	..	..	..	..	..	..	5	..	..	..	..	5
Botany	13	..	..	..	..	..	..	..	4	..	..	..	..	3
Chemistry	14	16	..	..	..	..	..	..	2	..	..	..	..	2
Chemical Engineering	7	..	..	7	..	..	..	..	..	..	..	..	..	..
Civil Engineering	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Classics	1	6	..	..	..	..	..	..	..	..	..	..	..	5
Dentistry	..	..	..	..	..	..	..	..	..	3	..	..	..	..
Educational Theory	1	3	..	..	..	..	..	..	..	..	..	..	..	2
Electrical Engineering	..	..	..	4	..	..	..	..	..	..	..	..	..	1
English	..	29	..	..	..	..	..	..	..	..	..	..	..	38
Epidemiology and Biometrics	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Food Chemistry	..	2	..	..	..	..	..	..	..	..	..	..	..	3
Forestry	..	..	..	..	..	..	..	4	..	..	..	..	..	2
Geology and Palaeontology	15	..	..	..	..	..	..	..	..	..	..	..	..	..
Germanic Languages	..	5	..	..	..	..	..	..	..	..	..	..	..	6
History	7	25	..	..	..	..	..	..	..	..	..	..	..	5
Household Science	..	7	..	..	..	..	..	..	..	..	..	..	..	1
Hygiene and Preventive Medicine	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Law	2	16	..	..	..	..	..	..	..	..	..	..	..	1
Mathematics	6	7	..	..	..	..	..	..	..	..	..	..	..	3
Mechanical Engineering	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Mineralogy	2	..	..	..	..	..	..	..	..	..	..	..	..	1
Mining Engineering	..	..	..	2	..	..	..	..	..	..	..	..	..	..
Music	..	..	..	..	..	..	..	..	..	..	..	..	1	..
Pathology and Bacteriology	3	2	..	..	..	..	..	..	..	..	..	..	..	..
Pathological Chemistry	2	6	..	..	..	..	..	..	..	..	..	..	..	..
Pedagogy	..	..	..	..	..	..	106	..	..	..	..	..	..	..
Pharmacology	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Philosophy	11	21	..	..	..	..	..		..	..	..	..	..	15
Physics	17	10	..	..	..	..	..		..	..	..	..	..	5
Physiology	4	3	..	..	..	..	..		..	..	..	..	..	..
Political Science	2	24	..	..	..	..	..	..	1	..	..	..	..	4
Professional Degrees	..	..	..	..	2	3	..	..	..	..	..	..	..	..
Psychiatry	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Psychology	..	12	..	..	..	..	..	..	..	..	..	..	..	54
Romance Languages	2	5	..	..	..	..	..	..	..	..	..	..	..	19
Semitics	5	8	..	..	..	..	..	..	..	..	..	..	..	..
Surgery	..	..	8	..	..	..	..	..	..	..	..	..	..	..
Veterinary Science	..	..	..	..	..	..	..	..	..	..	1	1	..	..
Special Committees	4	7	..	..	..	..	..	..	..	..	..	..	..	2
Totals	152	229	8	14	2	3	106	4	12	3	1	1	1	184

(*h*) Results of the Annual Examinations

FACULTY OF ARTS

First Year

Course	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Conditioned	Failed	Aegrotat	Honours Deferred	Debarred
Pass	..	160	120	51	73	404	237	83	84	1	..	..
Supplementals	..	42	23	11	11	87	64	23	..	1	..	..
Classics	..	9	6	4	..	19	16	2	1	..	..	..
Latin (French or Greek Option)	..	7	6	1	4	18	11	2	5	..	..	..
Modern Languages	..	28	16	10	4	58	46	2	10	..	..	..
English and History	..	22	20	8	2	52	41	..	11	1	..	..
Modern History	..	1	3	2	1	7	5	2	..	..	..	..
Political Science	..	18	14	20	1	53	26	13	14	1	1	2
Sociology	..	1	5	1	..	7	5	1	1	..	..	..
Law	..	18	10	4	..	32	22	4	6	..	..	..
Philosophy	..	..	1	..	7	8	5	3	..	..	..	..
Philosophy (English or History Option)	..	9	10	3	2	24	14	7	3	1	..	..
Psychology	..	2	1	..	..	3	2	..	1	..	..	..
Mathematical and Physical Sciences	..	42	28	7	4	81	34	16	31	..	2	3
Natural and Physical Sciences	..	52	35	22	10	119	67	35	17	1	7	7
Household Economics	..	18	23	4	..	45	24	18	3	1	..	..
Commerce and Finance	..	25	29	8	2	64	30	14	20	2	5	5
Occasional Students	5	2	2	..	..	9	9	..	..	..	..	..
Totals	5	456	352	156	121	1,090	658	225	207	9	15	17

Second Year

Course	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Conditioned	Failed	Aegrotat	Honours Deferred	Debarred
Pass	..	150	127	42	40	359	260	56	43	8	..	18
Supplementals	..	34	28	7	4	73	59	14	..	..	..	..
Classics	..	5	5	4	..	14	12	..	2	..	..	..
Greek and Hebrew	..	2	..	..	..	2	2	..	..	..	..	..
Latin (French or Greek Option)	..	3	3	..	3	9	8	1	..	..	..	..
Modern Languages	..	20	21	6	4	51	43	3	5	..	..	..
English and History	..	17	15	2	2	36	33	1	2	3	..	..
Modern History	..	5	3	3	..	11	8	..	3	..	..	..
Political Science	..	16	16	12	..	44	36	..	8	..	..	..
Sociology	..	4	4	..	..	8	7	1	..	..	..	..
Law	..	8	3	6	..	17	15	1	1	..	..	..
Philosophy	..	5	2	..	7	14	11	3	..	..	2	2
Philosophy (English or Hist. Option)	..	2	7	1	..	10	8	..	2	..	..	..
Psychology	..	5	1	..	..	6	4	2	..	..	..	..
Mathematics and Physics	..	17	11	2	3	33	19	2	12	1	..	1
Physics and Chemistry	..	3	1	..	..	4	4	..	..	..	..	..
Biology	..	6	6	..	..	12	8	2	2	1	..	..
Physiology and Biochemistry	..	2	1	1	..	4	1	2	1	..	..	..
Biological and Medical Sciences	..	18	12	5	2	37	16	16	5	1	6	7
Chemistry	..	7	6	..	..	13	6	2	5	..	..	..
Chemistry, Mineralogy and Geology	..	2	..	..	..	2	1	1	..	..	..	..
Geology and Mineralogy	..	..	2	..	..	2	1	1	..	..	1	1
Science (General)	..	..	3	..	..	3	2	1	..	..	1	1
Occasional Students	3	..	..	..	1	4	4	..	..	..	..	..
Totals	3	377	323	102	69	874	652	119	103	16	10	31

Third Year

Course	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Conditioned	Failed	Aegrotat	Honours Deferred	Debarred
Pass	..	96	53	38	28	215	196	14	5	1	..	..
General	..	5	4	..	..	9	8	..	1	..	..	..
Supplementals	..	27	10	1	1	39	35	4	..	..	..	..
Classics	..	5	11	4	1	21	16	..	5	2	..	..
Latin (French or Greek Option)	..	..	5	..	..	5	4	1	..	..	..	1
Modern Languages	..	13	20	6	2	41	39	1	1	4	..	..
English and History	..	20	13	4	..	37	36	..	1	2	..	..
Modern History	..	1	2	1	..	4	4	..	..	..	..	..
Political Science and Economics	..	10	6	2	..	18	18	..	..	..	..	..
Law	..	7	3	3	..	13	13	..	..	..	..	..
Philosophy	..	2	1	..	1	4	3	1	..	..	1	1
Philosophy (English or History Option)	..	2	5	..	..	7	7	..	..	1	..	..
Psychology	..	2	4	..	..	6	4	1	1	..	1	1
Mathematics and Physics	..	13	8	3	1	25	17	2	6	..	..	..
Physics and Chemistry	..	3	..	..	..	3	3	..	..	..	..	1
Physics and Geology	..	1	..	..	..	1	1	..	..	..	..	..
Biology	..	8	1	1	..	10	8	1	1	..	..	..
Physiology and Biochemistry	..	3	1	..	..	4	3	1	..	..	..	..
Biological and Medical Sciences	..	18	4	1	..	23	14	..	9	..	..	..
Chemistry	..	4	..	1	..	5	4	1	..	..	..	1
Chemistry, Mineralogy and Geology	..	2	5	..	..	7	3	2	2	..	1	1
Geology and Mineralogy	..	1	1	..	..	2	2	..	..	..	..	..
Food Chemistry	..	1	1	..	..	2	1	1	..	..	..	..
Household Economics	..	15	17	3	..	35	26	8	1	..	1	1
Commerce and Finance	..	32	21	5	..	58	48	4	6	1	..	3
Occasional Students	3	..	..	..	..	3	3	..	..	..	..	..
Totals	3	291	196	73	34	597	516	42	39	11	4	10

Fourth Year

Course	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Conditioned	Failed	Aegrotat	Degree without Honours
Pass	..	85	56	8	22	171	144	16	11	4	..
Supplementals	..	14	9	3	11	37	30	7	..	..	..
Classics	..	4	4	2	1	11	11	..	..	..	1
Latin (French or Greek Option)	..	4	7	1	1	13	13	..	..	3	..
Modern Languages	..	19	13	6	2	40	40	..	..	2	..
English and History	..	21	16	2	..	39	39	..	..	..	..
Modern History	..	4	3	2	..	9	9	..	..	..	..
Political Science and Economics	..	11	..	3	..	14	14	..	..	..	..
Law	..	4	4	..	..	8	8	..	..	..	..
Philosophy	..	2	4	2	10	18	17	1	..	1	1
Philosophy (English or History Option)	..	1	3	..	..	4	4	..	..	..	..
Psychology	..	3	1	..	..	4	4	..	..	..	..
Mathematics and Physics	..	12	8	..	2	22	22	..	..	..	3
Physics and Chemistry	..	1	..	..	..	1	1	..	..	..	..
Biology	..	3	..	..	..	3	3	..	..	..	..
Physiology and Biochemistry	..	1	2	..	..	3	3	..	..	..	..
Biological and Medical Sciences	..	7	8	3	..	18	18	..	..	..	2
Chemistry	..	3	5	..	..	8	8	..	..	..	..
Geology and Mineralogy	..	1	..	..	..	1	1	..	..	..	..
Household Economics	..	16	13	1	1	31	30	1	..	..	..
Commerce and Finance	..	36	16	2	..	54	54	..	..	1	1
Occasional Students	2	..	1	..	..	3	3	..	..	..	..
Totals	2	252	173	35	50	512	476	25	11	11	8

Teachers' Classes

	Passed	Conditioned	Total
May Examination	222	98	320
September Examination	216	68	284
	438	166	604
Duplicates			143
Totals			461

Faculty of Medicine

	Passed	Conditioned	Failed
First Year	93	30	13
Second Year	89	21	14
Third Year	77	28	19
Fourth Year	114	18	6
Fifth Year	101	9	1
Sixth Year	101	6	1
Diploma in Public Health	11	..	..
B.Sc. (Med.)	6	..	..
Totals	592	112	54

Faculty of Applied Science and Engineering

	Passed with Honours	Passed	Conditioned	Failed
First Year—				
Civil Engineering	2	9	4	..
Mining Engineering	1	18	9	13
Mechanical Engineering	4	28	14	7
Architecture	1	7	4	1
Chemical Engineering	8	50	22	20
Electrical Engineering	8	28	15	6
Metallurgical Engineering	..	3	3	5
Second Year—				
Civil Engineering	2	18	13	2
Mining Engineering	..	19	9	2
Mechanical Engineering	2	38	20	9
Architecture	2	10	2	..
Chemical Engineering	11	37	13	11
Electrical Engineering	7	29	14	15
Metallurgical Engineering	3	8	1	..
Third Year—				
Civil Engineering	4	28	8	2
Mining Engineering	4	7	3	1
Mechanical Engineering	8	32	10	10
Architecture	1	4	..	..
Chemical Engineering	6	35	21	4
Electrical Engineering	7	35	13	6
Metallurgical Engineering	..	5	3	..
Fourth Year—				
Civil Engineering	9	26	7	..
Mining Engineering	1	10	5	2
Mechanical Engineering	5	40	11	2
Architecture	4	5	..	..
Chemical Engineering	13	21	3	2
Electrical Engineering	12	36	12	3
Metallurgical Engineering	2	10	3	..
Fifth Year—				
Architecture	4	5	3	..
Totals	131	601	245	123

Faculty of Household Science

	Passed	Conditioned	Failed
First Year	6	2	..
Second Year	4	1	4
Third Year	3	2	1
Fourth Year	37	5	1
Occasional student	1	..	..
Supplementals	4	..	..
Totals	55	10	6

Ontario College of Education

	Passed	Failed
*High School Assistants' Course	512	..
Specialists' Courses	194	..
First Class Public School Course	150	..
Elementary Art Course	27	..
Specialists' Art Course	10	..
Elementary Commercial Course (passed in part)	56	..
Elementary Music Course	13	..
Elementary Physical Education Course	158	..
Specialists' Physical Education Course	37	..
Intermediate Household Science Course	2	..
Librarians' Course	44	..
Bachelor of Pedagogy Course	53	..
Bachelor of Pedagogy Course (passed in part)	118	..
Number who failed in whole or part	..	166
Totals	1,374	166

*Many of these are included among those who passed or failed in the other courses in this list.

Faculty of Forestry

	Passed	Conditioned	Deferred	Failed
First Year	4	4	1	..
Second Year	10	2	..	4
Third Year	14	5	..	3
Fourth Year	10	2	..	..
Totals	38	13	1	7

Faculty of Music

	Passed	Conditioned	Failed
First Year	1	4	1
Second Year	5	3	4
Third Year	1	5	2
Totals	7	12	7

Faculty of Dentistry

	Passed	Conditioned	Failed
First Year	15	4	1
Second Year	32	10	1
Third Year	32	8	2
Fourth Year	36	1	1
Fifth Year	33	2	..
B.Sc. (Dent.) Candidates	3	..	1
Dental Nurses	22	3	..
Totals	173	28	6

Departments

The numbers examined in the different departments of the University, including those persons granted standing for military service, were as follows:

Arts:		
Fourth Year	512	
Third Year	597	
Second Year	874	
First Year	1,090	
Teachers' Course	461	
Graduates (Specialist Standing)	67	
		3,601
Medicine:		
Sixth Year	108	
Fifth Year	111	
Fourth Year	138	
Third Year	124	
Second Year	124	
First Year	136	
Diploma in Public Health	11	
B.Sc. (Med.)	6	
		758
Applied Science and Engineering:		
Fifth Year	12	
Fourth Year	244	
Third Year	257	
Second Year	297	
First Year	290	
		1,100
Household Science		71
Education		892
Forestry		59
Music		26
Graduate Studies		300
Dentistry		207
Social Science		77
School of Nursing		49
Law		14
Pharmacy		183
Agriculture		98
Veterinary Science		26
Local Examinations in Music		13,799

(*i*) Admission to Degrees:

	Men	Women	Total
LL.D. (Honorary)	12	...	12
D.Arch. (Honorary)	1	...	1
Mus.Doc. (Honorary)	1	...	1
Ph.D	34	5	39
M.A	75	42	117
M.S	1	...	1
M.A.Sc	13	...	13
C.E	1	...	1
E.E	3	...	3
D.Paed	3	...	3
M.Sc. (Dent.)	1	...	1
B.A	334	361	695
B.Com	48	6	54
M.D	104	8	112
B.Sc. (Med.)	5	1	6
B.A.Sc	172	...	172
B.Arch	2	...	2
B.H.Sc	...	50	50
B.Paed	46	7	53
B.Sc.F	10	...	10
Mus. Bac	1	...	1
D.D.S	31	1	32
B.Sc. (Dent.)	3	...	3
LL.B	5	...	5
B.S.A	96	1	97
D.V.Sc.	1	...	1
B.V.Sc	24	...	24
Phm.B	81	5	86
Totals	1,108	487	1,595

(*j*) Geographical Distribution of Students:

FACULTY OF ARTS

	University of Toronto	University College	Victoria College	Trinity College	St. Michael's College	Duplicates	Totals
Ontario: (1) Province	346	495	460	160	100	8	1,553
(2) Toronto	398	814	510	178	125	10	2,015
Nova Scotia	2	3	1	1	1	..	8
New Brunswick	1	4	..	1	1	..	7
Prince Edward Island	..	4	..	..	..	..	4
Quebec	5	1	1	..	2	..	9
Manitoba	7	7	2	3	..	..	19
Saskatchewan	4	13	9	1	5	1	31
Alberta	2	14	5	1	1	..	23
British Columbia	3	2	1	4	..	..	10
United States	4	11	4	3	33	..	55
Elsewhere	3	12	15	2	..	..	32
Totals	775	1,380	1,008	354	268	19	3,766

THE UNIVERSITY

	Faculty of Arts	Faculty of Medicine	Faculty of Applied Science and Engineering	Faculty of Household Science	Ontario College of Education	Faculty of Forestry	Faculty of Music	School of Graduate Studies	Faculty of Dentistry	Department of Social Science	School of Nursing	Physiotherapy	Registered Twice	TOTALS
Ontario:														
(1) Province........	1,553	315	381	20	602	32	16	227	92	24	120	..	14	3,368
(2) Toronto........	2,015	421	465	42	315	20	11	328	73	39	63	5	39	3,758
Nova Scotia............	8	6	..	..	8	..	..	16	..	3	5	..	..	46
New Brunswick.........	7	6	1	..	5	..	..	11	1	..	2	..	..	33
Prince Edward Island....	4	..	..	1	..	..	..	5	..	..	..	..	..	10
Quebec.................	9	6	1	..	7	1	1	9	3	..	1	..	..	38
Manitoba..............	19	3	3	..	14	..	..	16	12	2	2	..	..	71
Saskatchewan...........	31	15	10	1	27	3	1	28	12	3	5	..	..	136
Alberta.................	23	10	4	1	1	1	1	14	2	3	3	..	..	63
British Columbia........	10	22	3	..	12	..	2	15	1	2	..	1	1	67
United States...........	55	10	5	1	8	..	2	30	9	1	3	..	..	124
Elsewhere..............	32	10	10	1	1	2	..	21	5	1	12	..	..	95
Totals..........	3,766	824	883	67	1,000	59	34	720	210	78	216	6	54	7,809

THE PROVINCE OF ONTARIO

	Faculty of Arts	Faculty of Medicine	Faculty of Applied Science and Engineering	Faculty of Household Science	Ontario College of Education	Faculty of Forestry	Faculty of Music	School of Graduate Studies	Faculty of Dentistry	Department of Social Science	School of Nursing	Physiotherapy	Registered Twice	TOTALS
Algoma	33	8	5	..	6	..	..	1	3	..	4	..	..	60
Brant	42	9	5	1	13	..	..	5	2	..	1	..	1	77
Bruce	36	4	13	..	12	..	..	4	10	1	6	..	1	85
Carleton	85	8	11	1	36	..	1	19	6	3	2	..	1	171
Cochrane	7	..	..	..	..	..	..	..	3	..	..	..	..	10
Dufferin	15	2	3	1	5	..	..	3	1	..	2	..	1	31
Dundas	9	..	..	..	4	..	..	..	1	..	..	..	..	14
Durham	29	2	6	..	6	1	..	1	1	..	1	..	..	47
Elgin	14	..	3	2	17	..	..	3	..	1	1	..	..	41
Essex	47	12	15	..	19	..	..	1	2	1	..	..	..	97
Frontenac	4	2	..	..	19	..	..	3	1	1	1	..	..	31
Glengarry	4	2	1	..	4	..	..	..	..	..	..	..	..	11
Grenville	6	4	..	..	4	..	..	2	..	..	..	..	..	16
Grey	50	7	9	..	13	2	..	5	2	..	3	..	..	91
Haldimand	14	2	5	1	3	1	..	2	1	..	1	..	..	30
Haliburton	3	..	..	..	1	..	..	3	..	..	1	..	..	8
Halton	38	6	8	..	9	..	1	..	..	..	3	..	..	65
Hastings	18	3	5	..	14	2	1	3	1	..	2	..	1	48
Huron	32	3	8	2	12	1	1	5	1	..	3	..	1	67
Kenora	8	..	6	..	1	..	1	..	..	..	2	..	..	18
Kent	21	8	8	..	15	..	1	3	3	..	1	..	..	60
Lambton	26	7	7	1	13	1	..	4	3	..	6	..	..	68
Lanark	13	2	1	..	14	1	..	5	..	1	..	..	..	37
Leeds	11	3	2	..	7	1	..	3	..	1	3	..	..	31
Lennox & Addington	4	..	..	..	5	..	..	..	..	..	..	..	..	9
Lincoln	50	6	16	1	16	..	1	2	4	..	4	..	..	100
Manitoulin	1	..	1	..	..	..	..	13	..	..	..	..	..	15
Middlesex	22	..	7	..	57	..	..	..	3	..	3	..	..	92
Muskoka	9	2	2	..	10	1	..	2	2	..	1	..	..	29
Nipissing	22	10	2	..	3	..	..	5	..	..	3	..	..	45
Norfolk	15	7	5	..	3	..	1	4	3	..	1	..	..	39
Northumberland	23	1	2	..	5	..	..	1	..	..	2	..	..	34
Ontario	50	12	8	..	12	1	..	6	1	1	2	..	..	93
Oxford	41	8	10	1	19	..	..	3	..	..	1	..	1	82
Parry Sound	9	2	1	..	2	1	..	..	..	..	1	..	..	16
Peel	66	5	22	..	7	2	..	4	4	3	5	..	..	118
Perth	47	10	13	..	17	1	..	6	5	..	1	..	1	99
Peterborough	28	6	5	..	10	..	2	3	3	..	3	..	..	60
Prescott	2	..	..	..	3	..	..	..	..	..	2	..	..	7
Prince Edward	7	2	..	..	3	..	..	2	..	..	..	..	..	14
Rainy River	1	6	..	..	2	..	..	..	..	..	1	..	..	10
Renfrew	10	2	3	..	7	..	..	1	..	..	1	..	..	24
Russell	..	..	..	..	..	..	..	..	1	..	..	..	..	1
Simcoe	88	20	18	1	17	..	..	7	2	..	7	..	1	159
Stormont	5	2	1	..	7	..	..	..	..	..	..	..	..	15
Sudbury	13	..	5	2	1	..	..	..	..	..	..	..	..	21
Thunder Bay	35	2	15	..	11	3	..	4	6	1	6	..	..	83
Timiskaming	17	9	10	..	6	2	..	1	3	..	3	..	..	51
Victoria	22	6	3	..	4	1	..	4	1	..	1	..	..	42
Waterloo	54	13	11	1	17	2	1	12	2	2	8	..	1	122
Welland	49	17	12	1	12	..	..	5	..	1	3	..	..	100
Wellington	53	9	15	1	24	3	1	14	2	1	4	..	..	127
Wentworth	67	38	35	2	45	4	1	30	8	2	4	..	2	234
York	178	26	38	1	30	1	3	23	1	4	10	..	2	313
Toronto	2,015	421	465	42	315	20	11	328	73	39	63	5	39	3,758
Totals	3,568	736	846	62	917	52	27	555	165	63	183	5	53	7,126